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JULY 18, 1936

Railway Age

Founded in 1856

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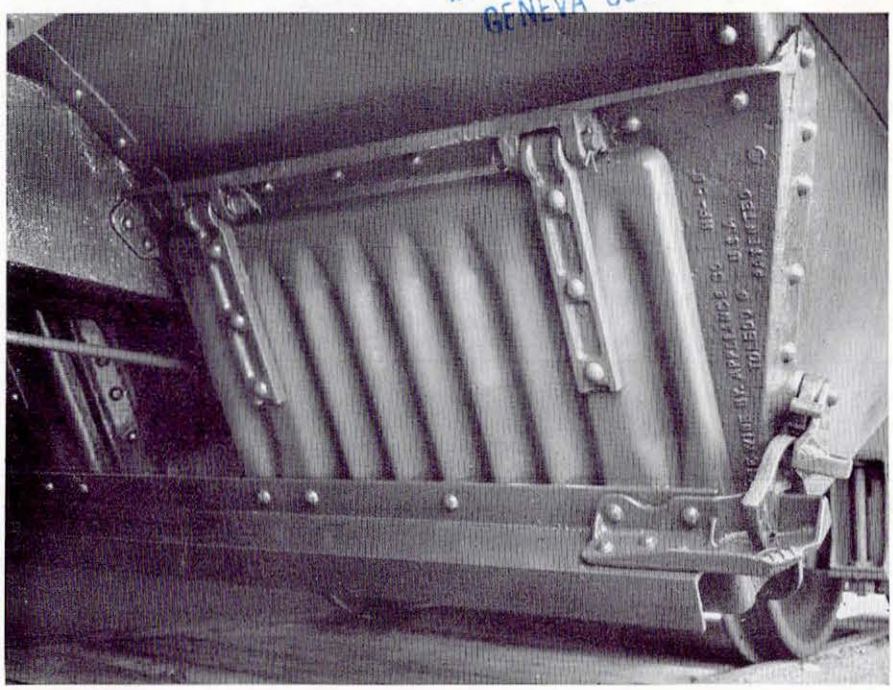
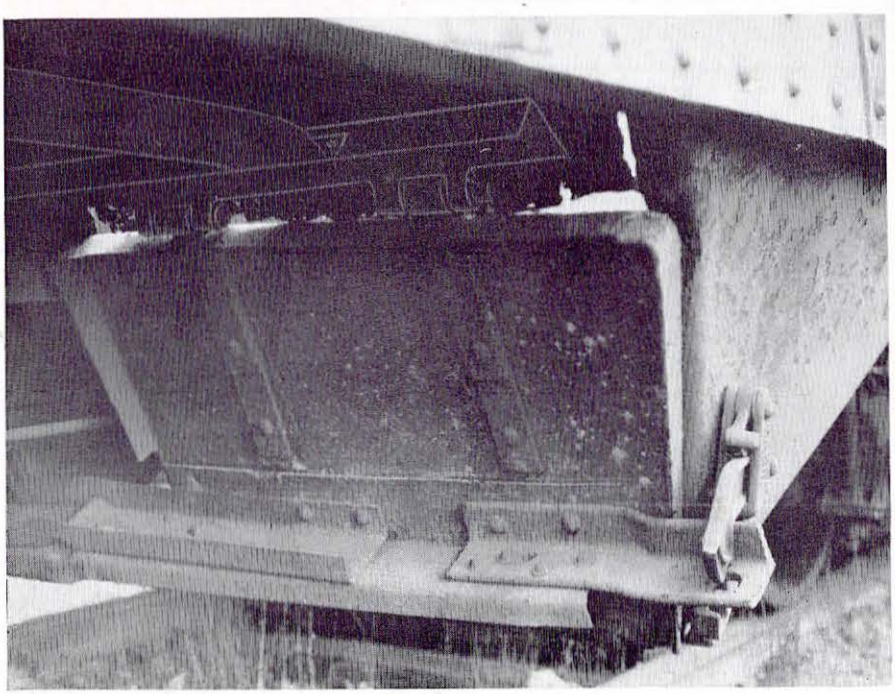
INCREASED
STRENGTH
PERMANENCE
RUGGEDNESS
STABILITY

WITH



WINE HOPPER FRAMES



WITH-
OUT

WEAKNESS
DETERIORATION
CORROSION
DISTORTION

THE WINE RAILWAY APPLIANCE CO. TOLEDO, OHIO

The Word OKONITE or MANSON on tape means as much as the word STERLING on Silver

The word OKONITE or MANSON on a roll of tape means that under all manner of conditions, in every kind of weather and service, these tapes stand the siege of time. Day in and day out, year in and year out, these tapes last. They last, in fact, just as long as the insulation on the wire itself.

The lifetime of a splice made with OKONITE and MANSON Tape is, therefore, equal to the lifetime of the wire. Durability, permanence—factors of true economy in the maintenance of your lines—are thus assured when you specify:

OKONITE TAPE—a rubber insulating tape, made of highest grade rubber and compounding ingredients that form a homogeneous mass of high dielectric strength and impervious to moisture.

MANSON TAPE—a rubber filled cloth tape for the mechanical protection of joints. Made by true friction method, this protective tape is unequalled in its adhesive qualities and length of service.

Write for samples and our booklet, "Splices and Tapes"

THE OKONITE COMPANY
Founded 1878
and
HAZARD INSULATED WIRE WORKS DIVISION

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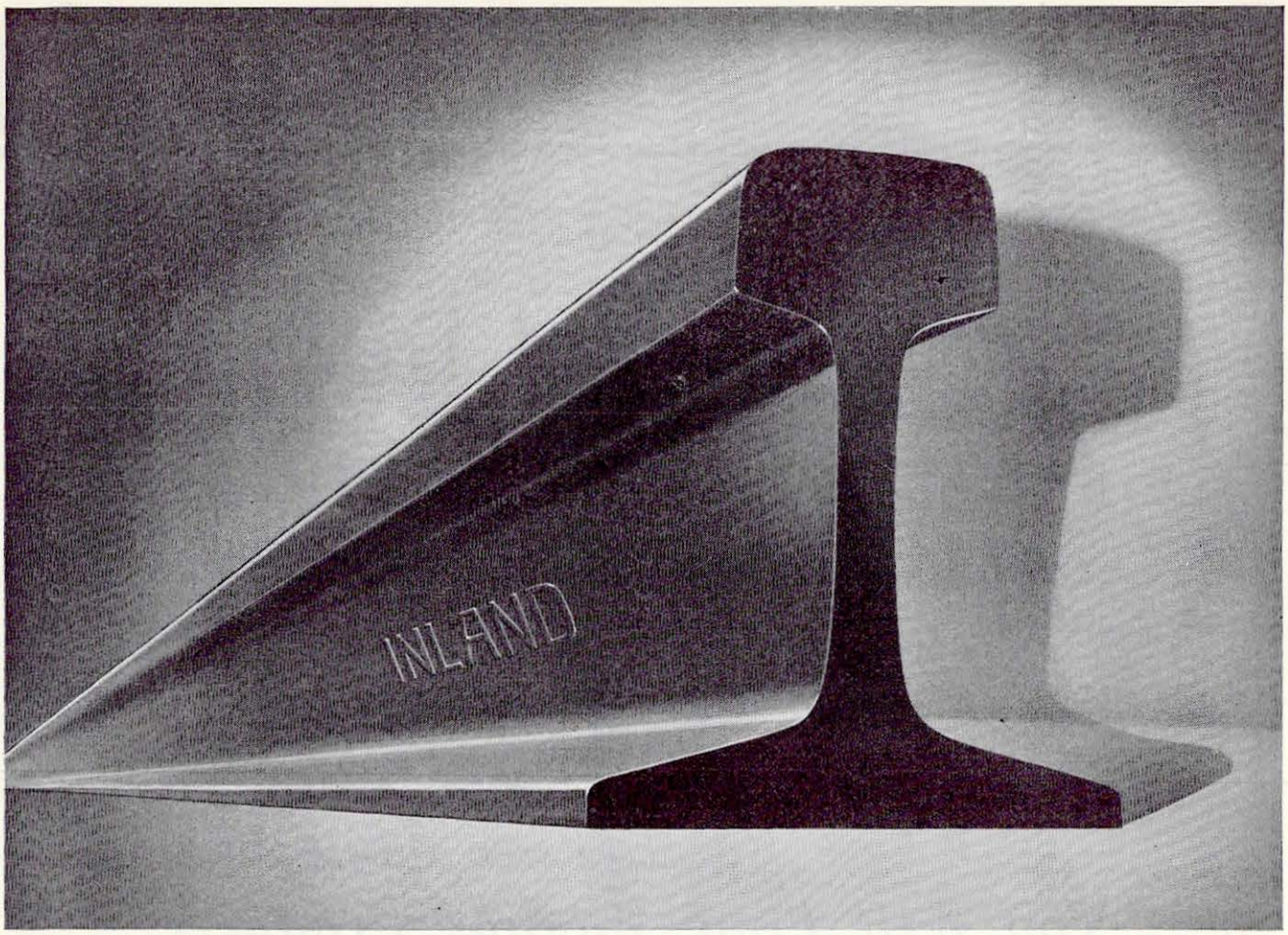
New York, Boston, Chicago, Detroit
Philadelphia, Pittsburgh, Washington, San Francisco
Los Angeles, Seattle, Dallas, Atlanta
Factories: Passaic, N. J., Wilkes-Barre, Pa., Paterson, N. J.

Published weekly by Simmons-Boardman Publishing Company, 1309 Noble Street, Philadelphia, Pa. Entered as second class matter, January 4, 1933, at the Post Office at Philadelphia, Pa., under the Act of March 3, 1879.



Controlled Cooling—Hardened Ends... Features of Inland Rails

Inland's controlled cooling method of rail treatment helps to prevent the formation of Shatter Cracks which may develop into transverse fissures.

Our special process of hardening the ends of Rails develops a 25 to 50 per cent increase in hardness without reduction of strength.

These two important processes improve the quality of the rail and add to its long life at only a slight increase in cost.

Inland Track Accessories are carefully manufactured, insuring accurate fit of parts, easy installation and many years of satisfactory service.

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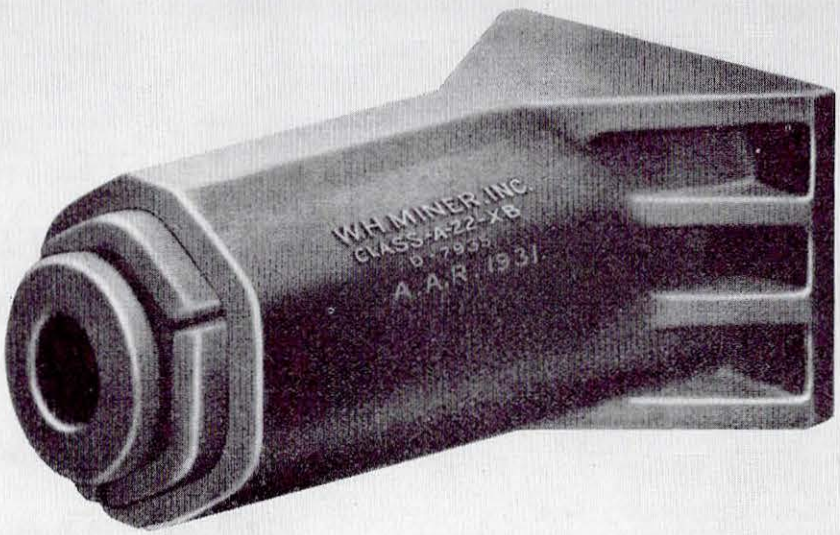

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BALDWIN LOCOMOTIVES
of all types for
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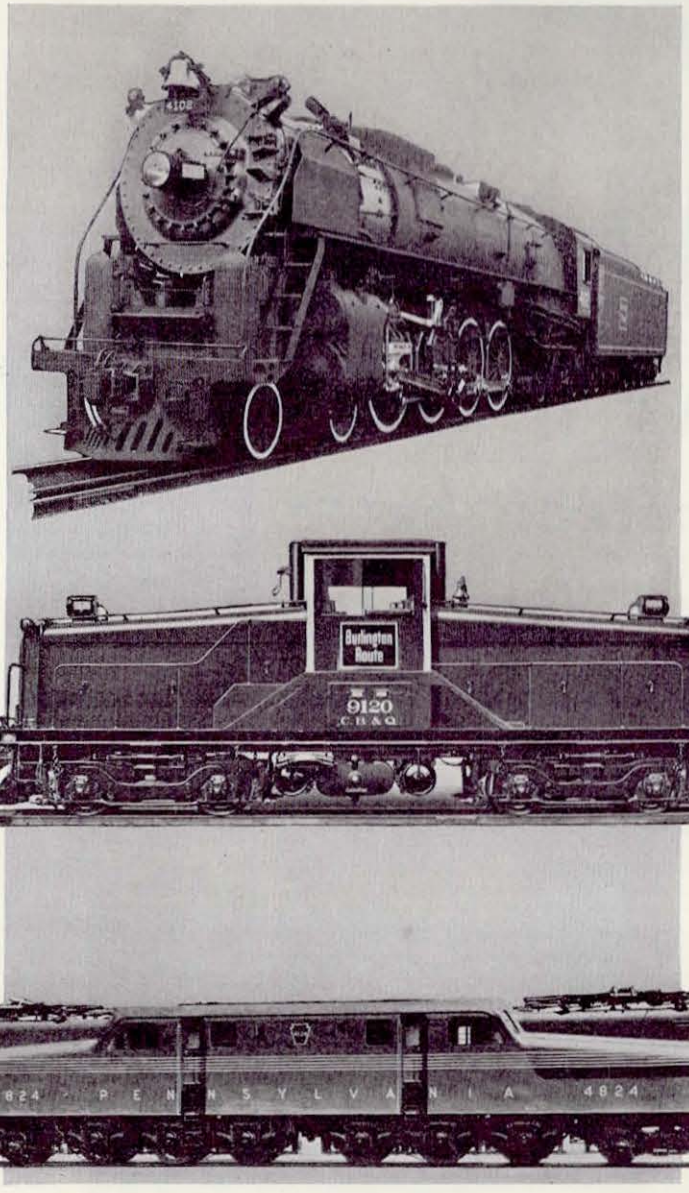

STEAM

INTERNAL COMBUSTION

ELECTRIC

THE BALDWIN

QUALITY MATERIALS
to Equip and Maintain Old or New Locomotives

BALDWIN DISC WHEEL

A new driving wheel design which provides for better counterbalance in wheels of small diameter. Also gives lighter, stronger construction than the conventional wheel. Makes possible higher safe speeds with old or new locomotives having small driving wheels.

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A simple, dependable, economical poppet type throttle with a limited number of parts. Easy to operate. Gives low maintenance cost and smooth rapid acceleration. Conventional housing provides for easy application to existing locomotives.

BALDWIN POWER REVERSE

An improved gear with rotating, flat-seat valves of corrosion-resisting alloy—separate valve seat, removable for regrinding at the bench—spare valve and seat can be quickly applied—integral floating lever guide prevents vibration.

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Individually cast packing rings of "ELFUR" electric furnace iron can be molded and cast not much larger than the finished dimensions. Only a minimum of the best metal is lost in machining, thus leaving more good metal to resist wear.

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A connecting rod is one of the vital parts of a locomotive. A failure on the road means expensive delay and may cause loss of life. It will pay to buy BALDWIN quality when replacing such important locomotive parts.

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BALDWIN offers locomotive and tender bearings and pressure castings made from new or refined scrap materials of predetermined chemical composition. Also brass and bronze bells, whistles, valves, window frames, and small castings of all kinds.

LOCO VALVE PILOT

BALDWIN acts as sales agent for LOCO VALVE PILOT, LOCO RECORDER, and parts. Consistent use of the proper cut-off secures maximum efficiency and economy. With the Valve Pilot the locomotive delivers uniformly all the power designed and built into it; schedules can be improved, tonnage ratings increased, and fuel economy realized.

SUNBEAM HEADLIGHT EQUIPMENT

BALDWIN acts as sales agent for SUNBEAM generators and headlights manufactured by a company which for 52 years has specialized in the development of improved locomotive lighting equipment. The name SUNBEAM stands for headlight dependability and economy.

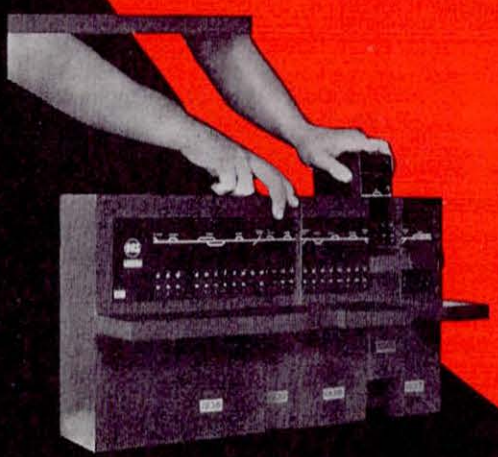
LOCOMOTIVE SPARE AND REPAIR PARTS

The true cost of a locomotive replacement part is its cost per mile of dependable service. BALDWIN offers quality materials that will decrease labor costs and minimize expensive detention in shops. Let us quote on your Equalizer Bars, Springs, Crossheads and finished parts of all kinds. Also high-grade castings and forgings to meet your requirements.

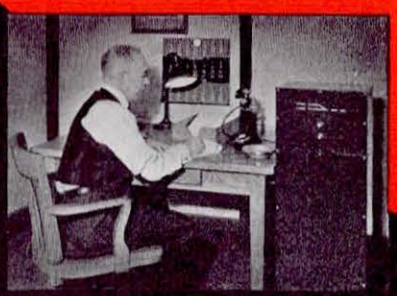
LOCOMOTIVE WORKS
PHILADELPHIA

CTC LO

Original Installation
Centralized Traffic Control
July 25, 1927



CTC Unit Plan
Building by Easy Stages



CTC Remote Control
Non-coded or coded

GRS

Developments from Centralized Traffic Control that are revolutionizing railroad operation

OKS AHEAD

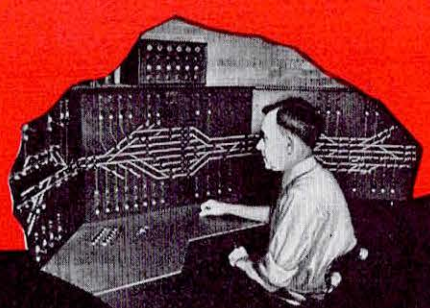
Ever since July 25, 1927, nine years ago, when the **Centralized Traffic Control** installation was put in service on the New York Central System, Ohio Central Lines, cTc has had a steady growth and widespread adaptation, until today its principle of operation is applied to complex interlockings and remote layouts.

cTc systems are now being designed for installation unit by unit, year by year, so that a complete program may be put in service in a few years, earning its way in the meantime.

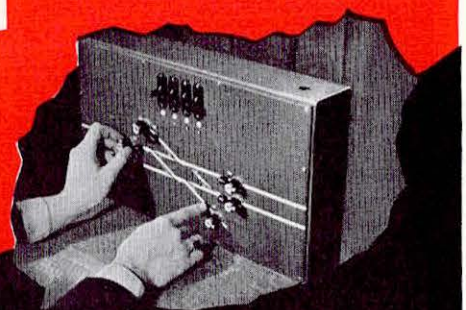
These progressive developments will have a marked influence on the future of railroad operation. Large cTc programs need not be deferred any longer, but started right away "by easy stages."

Your plans for Centralized Traffic Control will be given careful thought and serious consideration by our nearest district office.

cTc Mechanical Interlocking increases scope of plant electrically



cTc Electric Interlocking for smoother operation



NX Electric Interlocking eNtrance-eXit System for operating simplicity

GENERAL RAILWAY SIGNAL COMPANY

New York Chicago ROCHESTER, N. Y. St. Louis A-1337

Our HATS

ARE OFF to

Purchasing Agents, Storekeepers and their assistants

SINCE the days of Diamond Jim Brady, and the Goulds and Harrimans and Depews... the entire personnel of the United States Steel Corporation Subsidiaries has always been thoroughly conscious of the tremendous task involved in intelligently and expeditiously supplying the various steel requirements to the many departments of the railroads.

$156,914,000* was the staggering sum expended for iron and steel products alone in 1935. But with the growing improvement in railway income and the vast rehabilitation and modernization programs now under way, even that amount will soon seem small. This is indeed "big business." Our hats are off to the men whose responsibility it is to place it.

For the share of this business granted to the United States Steel Corporation Subsidiaries we wish to express our keen appreciation. And our gratitude also for the consistently fine and friendly attitude manifested by the railway supply department officers toward all of our representatives in their day by day contacts.

The wide acceptance by the railroads during the past year and their increasing interest in USS Cor-Ten, USS Stainless and other USS High Tensile Steels is more than indicative of the progressive spirit of the railroad industry. It is a spur to our whole organization to continue to develop new and better steels for railroad needs.

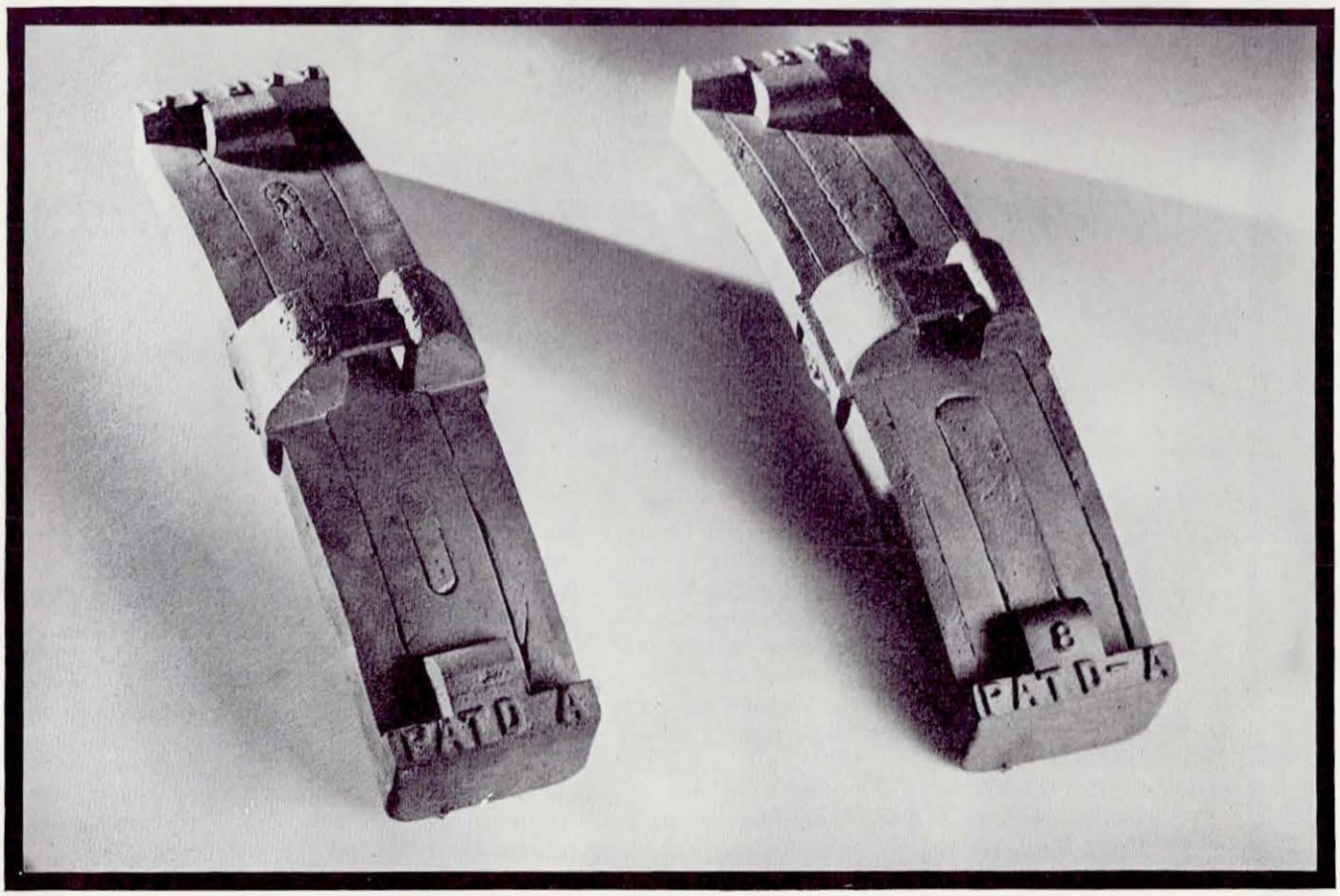
In the light of our pleasant association it seems hardly necessary to add that our service and all our facilities are always at your command—that we urge you to make the fullest use of them.

**Purchases of iron and steel products by Class I railroads during 1935 according to the Bureau of Railway Economics of the Association of American Railroads.*

American Bridge Company, *Pittsburgh*... American Steel & Wire Company, *Chicago - New York* .. Carnegie-Illinois Steel Corporation, *Pittsburgh - Chicago* .... Columbia Steel Company, *San Francisco*....Cyclone Fence Company, *Waukegan, Illinois* .... National Tube Company, *Pittsburgh*.....Tennessee Coal, Iron and Railroad Company, *Birmingham*.....Scully Steel Products Company, *Chicago*.....United States Steel Products Company, *New York, Export Distributors*

UNITED STATES STEEL

You Can See a Difference—*but*.....



You may note a difference in the steel back reinforcements of these two shoes. But, do you know what this difference means *to you?*

The A. A. R. says:

The fact that a very large per cent of brake shoes in freight service are never worn out but fail in large numbers before much shoe wear has developed is sufficient in itself to suggest that improvements in shoe design are not only desirable, but necessary.

—From Circular No. D.V. 846-A
Association of American Railroads

Do You Know What This Difference Means To You?

Find out by checking the following:

1 Are more than 12% of your freight car brake shoes removed because they are broken with part missing when they are but partially worn?

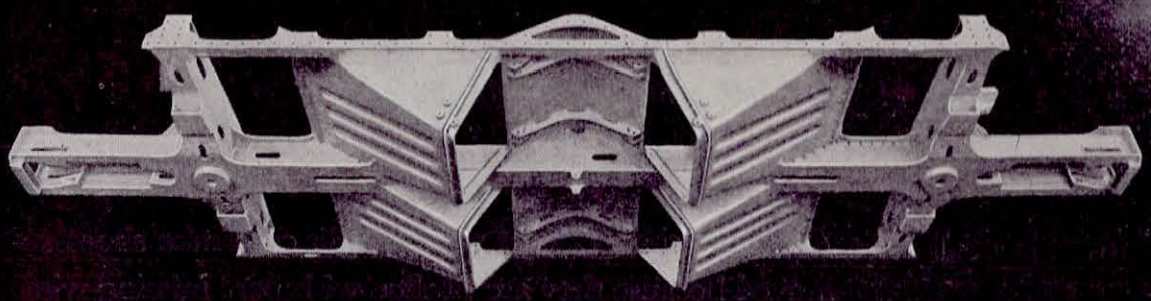
2 Would you like to reduce your freight car brake shoe requirements?

Data compiled for 9 Class I railroads by an impartial committee show that 53% of freight car brake shoes are removed *at an average thickness of one inch* on account of being broken with part missing.

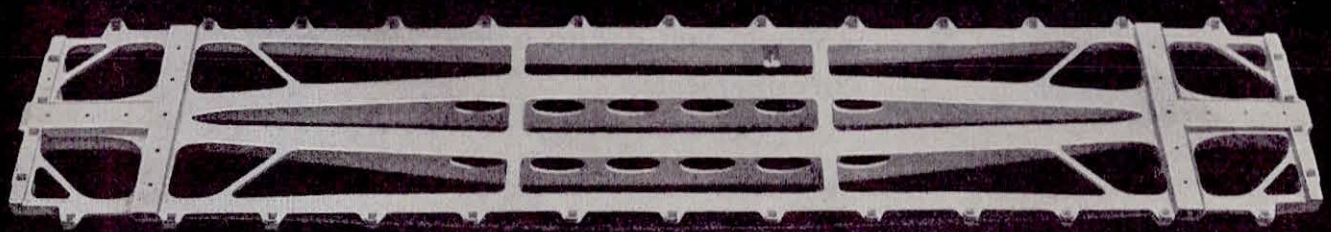
One of the brake shoes shown on the opposite page is the answer to the above questions and to the A.A.R. Circular No. D.V. 846-A. We can tell you about the new Duplane reinforced shoe better than we can write about it, so ask our representative how it will save money for *your* road.

THE AMERICAN BRAKE SHOE AND FOUNDRY COMPANY

CAST STEEL

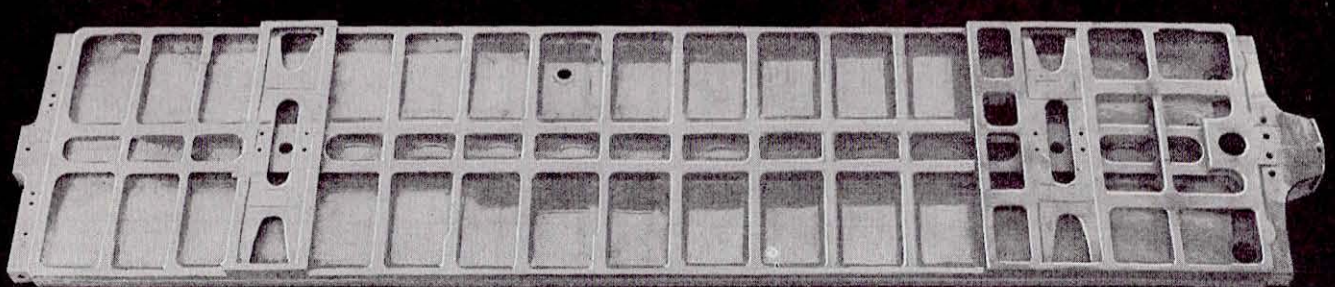


HOPPER CAR UNDERFRAME



FLAT CAR UNDERFRAME

DIESEL ELECTRIC UNDERFRAME



WATER-BOTTOM TENDERFRAME

COMMONWEALTH

FOUNDATIONS

FOR MODERN RAILROAD EQUIPMENT INSURE MANY ECONOMIES

More than 25% of all railway operating expense is charged to maintenance of equipment.

Commonwealth one-piece Locomotive Beds, Water-bottom Tenderframes, and Underframes for all types of freight cars offer highest returns on the investment.

The economies effected include longer service life of the equipment, greater serviceability, more mileage between shoppings, and bigger savings in maintenance costs.

Thousands of strong, permanent Commonwealth foundations are in service under modern steam power, large tenders, Diesel locomotives, and freight cars of all types.

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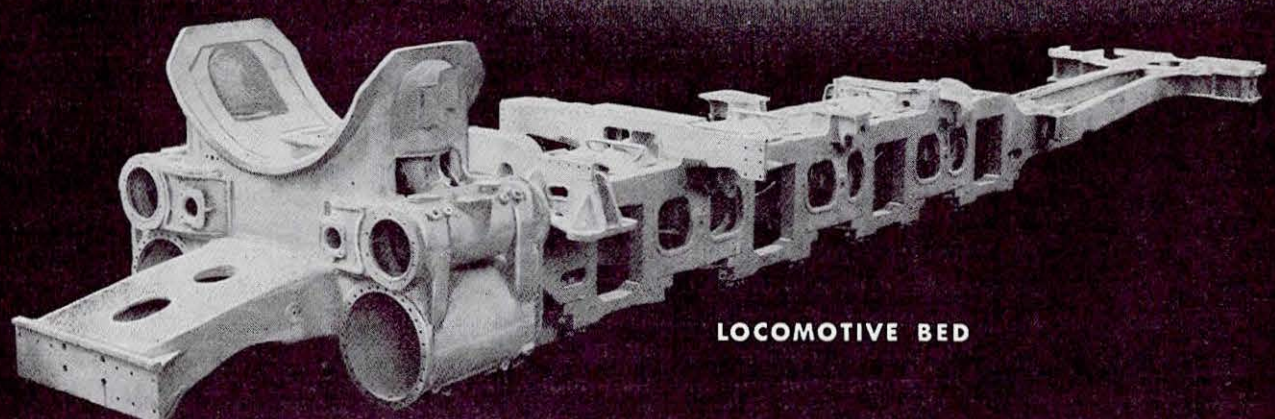


LOCOMOTIVE BED

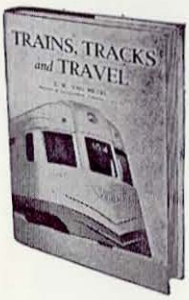
PRODUCTS

Valuable Books for Your Library

New Fourth Edition
Trains, Tracks and Travel

By T. W. VAN METRE

Professor of Transportation, Columbia University



The new edition of this popular book on railroads describes latest practice. There is a complete new chapter on streamlined trains and additions to others covering the new developments in air brakes, air conditioning of passenger cars and in high-speed Diesel and electric locomotives. Among the numerous new illustrations are shown the new streamlined trains. This is an excellent book for a boy who wants to know more about railroads and for the average reader.

Contents

Our Steam Railroads—The Railroad Track—The Steam Locomotive—Electric Locomotives; Gasoline and Oil Motors—Freight Cars—Passenger Train Cars—Tomorrow's Trains Become Today's—Passenger Stations and Terminals—The Operation of Trains.

1936. 4th. 312 pages, 276 illus., 7 x 9½ in., cloth, $3.00

Analysis of Railroad Operations

By J. L. WHITE

Formerly Assistant Comptroller, United States Railroad Administration; Director, Section of Transportation Service—Federal Co-ordinator of Transportation

Without going into the details of accounting procedure, Mr. White clearly explains the accepted method of analyzing and interpreting railroad statistical data. He describes how the figures produced in accounting departments should be used in the study of railroad operating results; how these figures reflect the various activities of the railroad and its efficient or inefficient operation as a whole or in any of its departments.

Classifications of the Interstate Commerce Commission are shown in full and frequent references are made to them in the main text.

1925. 391 pages, forms, index, work sheet, and the Jan. 1, 1935, order of the I. C. C., 6 x 9 inches, cloth. $4.00

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( ) Who's Who in Railroading
( ) United States Safety Appliances
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(This offer is limited to the United States and Canada) R.A. 7-18-36

United States Safety Appliances

(A. A. R. Edition)

The 14th edition of this book contains all the new laws, I. C. C. rulings and A. A. R. specifications since the last edition in 1928. More than 250,000 of these books have been sold.

1935. 121 pages, 49 drawings, 7½ x 3¾, imitation leather, $1.00

When Railroads Were New

By CHARLES FREDERICK CARTER

A fascinating human interest story of the early American and Canadian railroads and of the men who built and ran them. The author, an old railroad man, tells of the beginnings of the Erie, the Pennsylvania, the Baltimore and Ohio, the New York Central, the first Pacific railroad, the Santa Fe, the Rio Grande, the Canadian Pacific and other lines. It is illustrated with reproduction of wood cuts of early locomotives and railroad scenes.

1926. 4th (Centenary). 338 pages, 17 illustrations, 6 x 9 inches, cloth. $2.50

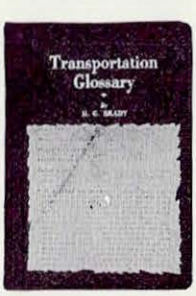
Who's Who in Railroading

The 9th Edition of what was formerly the "Biographical Directory of Railway Officials of America" is based upon a complete resurvey of the field by means of original questionnaires. Biographical sketches of some 4,000 railroad officials, equipment manufacturers, economists, members of regulatory commissions and others whose work is directly connected with the railroad industry of North America are presented. The descriptions of these leaders of the rail industry include personal information, such as their family connections and social, religious and political affiliations, as well as a complete outline of their professional careers.

1930. 579 pages, 6 x 9 x 1⅝ inches, cloth. $3.00

Transportation Glossary

By H. G. BRADY



Technical and semi-technical terms, phrases and expressions in more common use in railway, highway, air and marine transportation, and in port traffic are concisely defined in this handy reference book. Ordinary dictionaries, thesauri and law book sources furnish little information on transportation terms and this book fills a long felt need. It is printed in large clear type and cross references facilitate quick tracing of desired information.

1929. 119 pages, 5 x 7 inches, flexible. $1.75

STRENGTH

Yes Sir . . . Plenty of it

plus working and welding qualities that'll win your approval

★ If you are looking for a high-tensile steel that *conforms with practical design values* . . . that is tough and strong, yet readily workable and weldable, then you've found it in ARMCO H. T. 50. This high-tensile steel of today and tomorrow was not perfected overnight. Behind it are several years of intensive research and experimentation. It had to be right before it could bear the name ARMCO, and it is right.

A quick summary of ARMCO H. T. 50 shows it to be a material having higher physical properties than ordinary steel, with generously increased atmospheric corrosion resistance. It has good surface and other unusual characteristics and its forming and welding qualities are far above the average for this type of metal.

We won't attempt to tell you the whole story of ARMCO H. T. 50 here, as interesting as it is. We'd rather reveal its possibilities for your use in the illustrated folder prepared especially for sheet-and-plate fabricators. Your request on your letterhead, or even a penny postal card, will bring you a copy immediately. Address:

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SAN FRANCISCO

ARMCO

Average Physical Properties

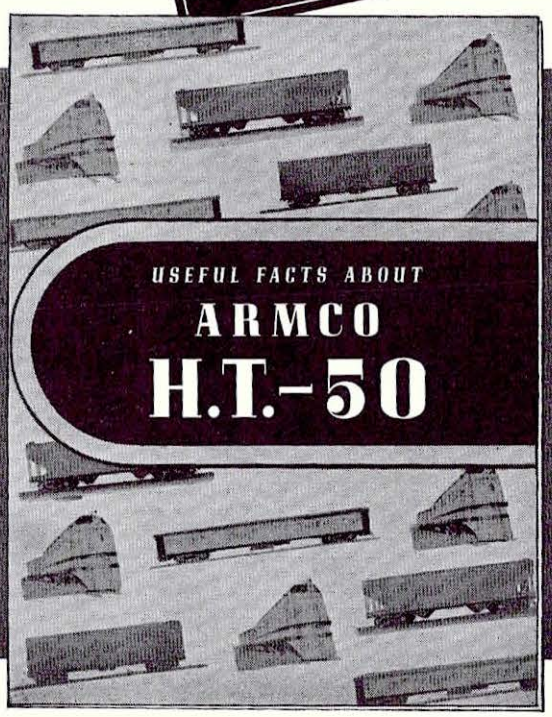
	Hot-Rolled	Cold-Rolled
Yield Point, lbs. per sq. inch	47,000	52,000
Tensile Strength, lbs. per sq. inch	67,000	70,000
Elongation in 2 in., per cent	28	25
Endurance Limit, lbs. per sq. in. (a)	48,000	
Impact Tensile, ft.-lbs. per sq. in. (b)	5,000	
Elongation in 2 in. on impact, per cent	33	

Atmospheric Corrosion Resistance . . . 4 to 6 times ordinary steel

ARMCO H.T.-50 is a tough steel of increased strength. It may be formed and welded easily, and offers increased atmospheric corrosion resistance.

(a) Rotating beam test.

(b) Made on sheets. For comparison, ordinary sheet steel absorbs 2,700 ft.-lbs. per sq. inch and elongates 24% in 2 inches.



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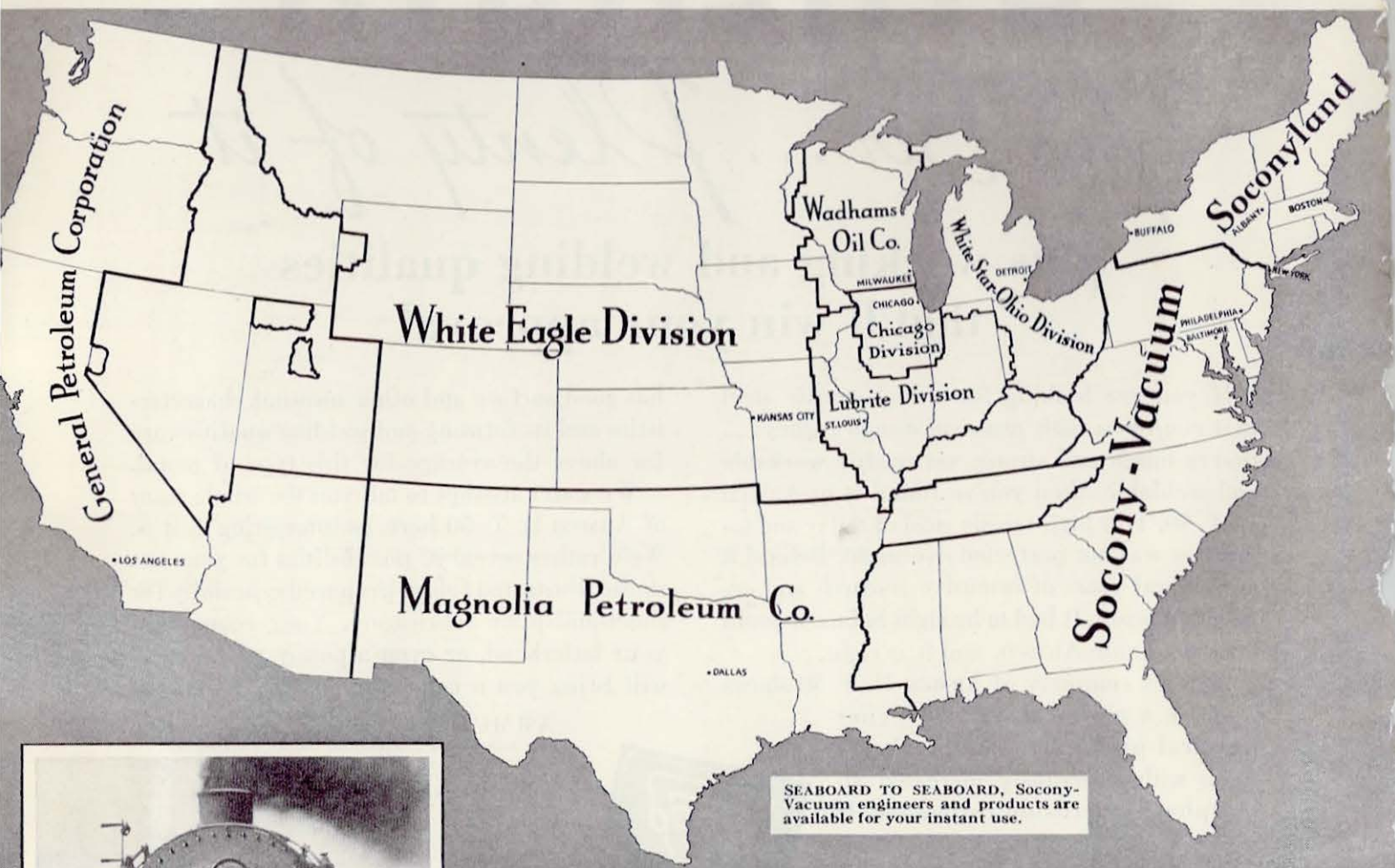
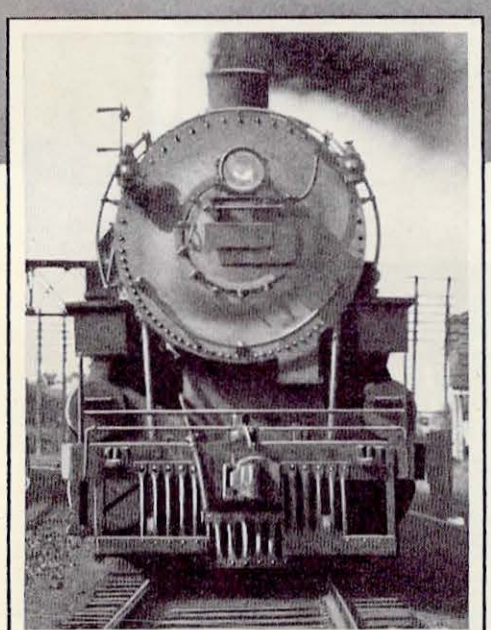
A NATION-WIDE SERVICE FOR AMERICA'S RAILROADS



SEABOARD TO SEABOARD, Socony-Vacuum engineers and products are available for your instant use.



YOUR PARTICULAR requirements are the sole basis of Socony-Vacuum's recommendations.

Products...Engineering Skill...Experience...Combined to aid your men devise valuable economies

OVER ONE HUNDRED leading American roads use Socony-Vacuum products . . . depend upon the helpful service of Socony-Vacuum's railroad-trained engineers. The operating records of these roads prove that every railroad in the country would find it advantageous to do the same.

Socony-Vacuum's facilities are nation-wide. No matter where your rolling stock goes or where your terminals are located, they are within easy reach of Socony-Vacuum Railroad Lubricants and Socony-Vacuum's railroad men. You'll find it profitable to make these products, and the 70 years' experience behind them, available to *your* men.

Address inquiries to Socony-Vacuum Oil Company, Incorporated, Railroad Division, 26 Broadway, N. Y. C.; 59 E. Van Buren St., Chicago, Illinois; or any affiliated company listed below.

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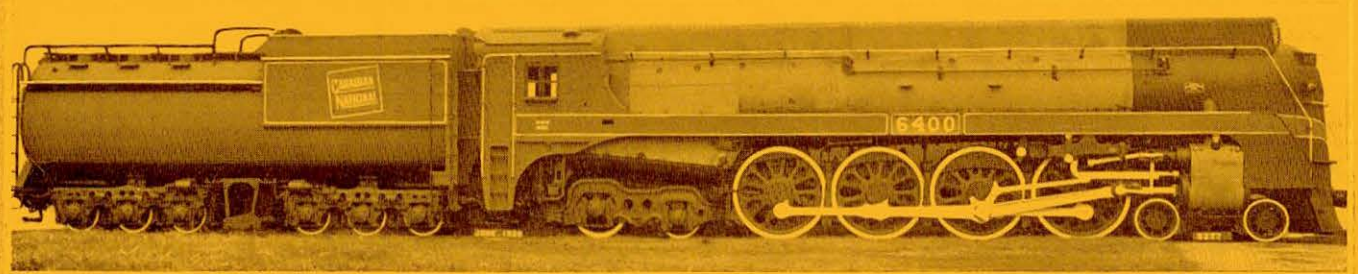
GARGOYLE Lubricants

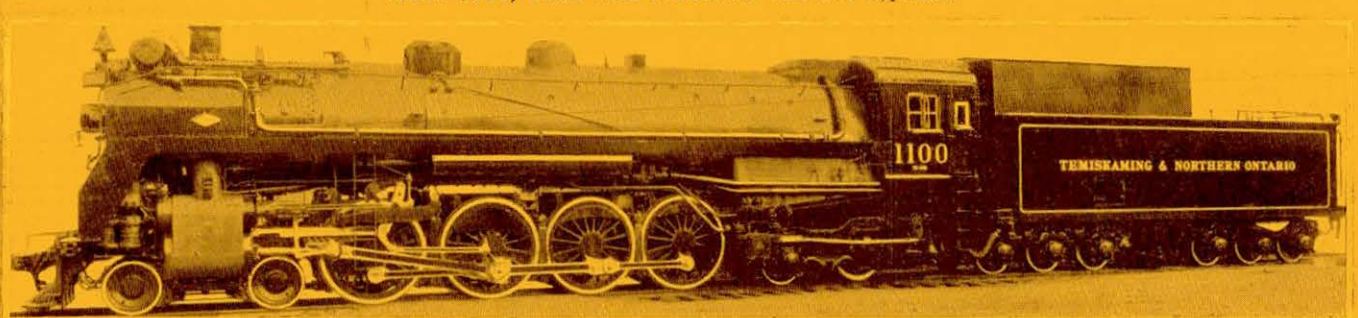
SYPHON EQUIPPED

The World Over

Some Recent Construction in Canada



Five locomotives built for the Canadian National Railways, series 6400, and five similar, series 6100, fitted with Nicholson Thermic Syphons



Two locomotives built for the Temiskaming & Northern Ontario Railroad, equipped with Nicholson Thermic Syphons.

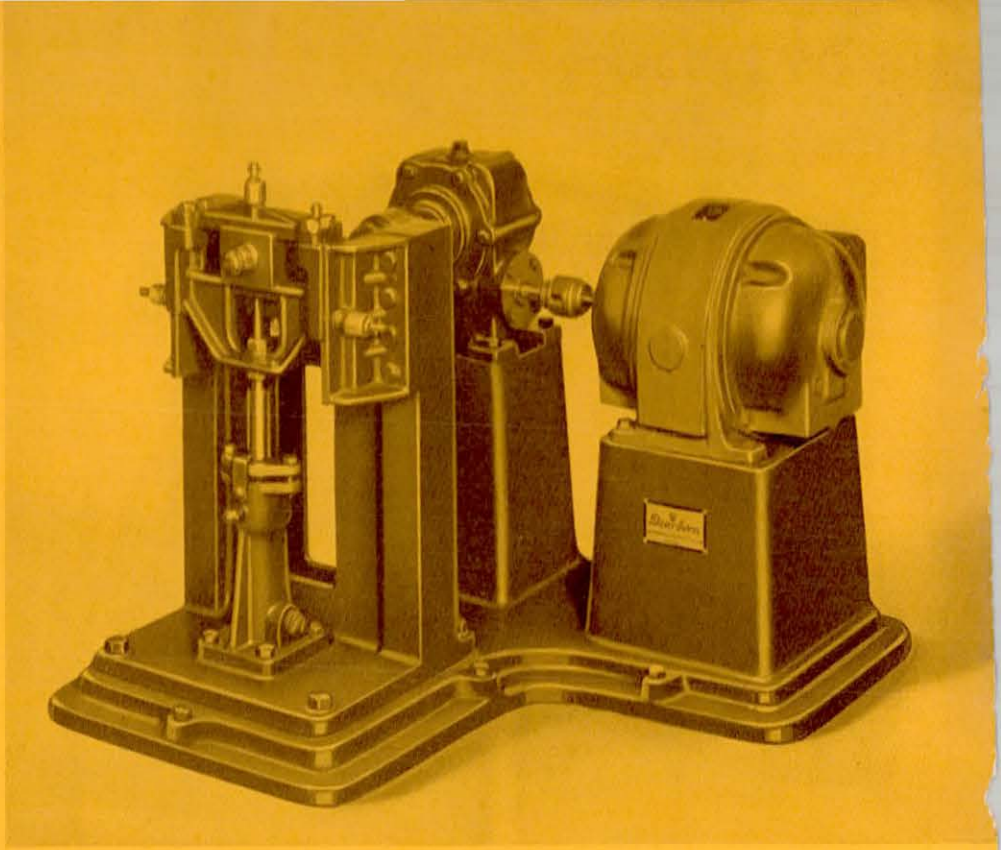
Five locomotives built for the Canadian National Railways, equipped with Nicholson Thermic Syphons.

15,933 Syphons have been applied to
7,278 Locomotives on 162 Railroads

LOCOMOTIVE FIREBOX COMPANY

NEW YORK CHICAGO LONDON MONTREAL

DEARBORN SERVICE COMBINES CORRECT CHEMICALS AND CORRECT METHODS OF APPLICATION



Scientific correctness of treating materials, in the Dearborn Method of handling locomotive water supplies, is obtained thru complete analysis and survey of water conditions. The manner of introducing the chemicals is as carefully developed, to assure the best possible results from the treatment used. Application may be made direct to boiler, to the tender, or by means of special equipment at water stations, as conditions warrant.

Dearborn Engineers will survey your water problem and make recommendations for the most economical and efficient method of treating the water to prevent scale formation, foaming, pitting and corrosion.

Dearborn
TRADE MARK REGISTERED

DEARBORN CHEMICAL COMPANY

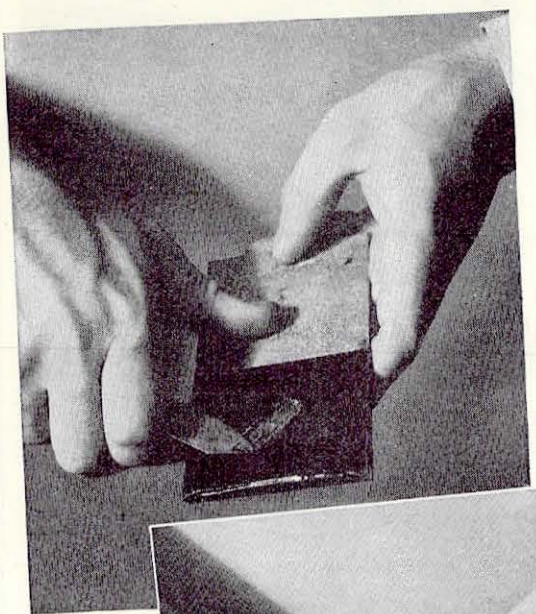
310 S. MICHIGAN AVENUE
CHICAGO

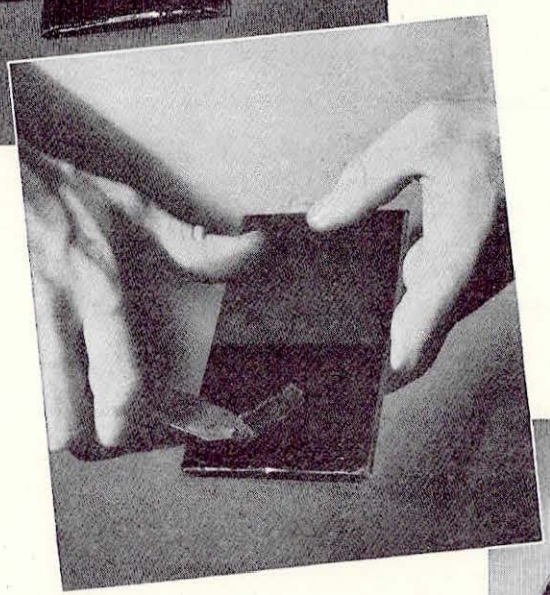
205 East 42nd Street
NEW YORK

2454 Dundas Street W.
TORONTO

PROVE ASBESTOS BONDING TO YOURSELF

With this Free Sample





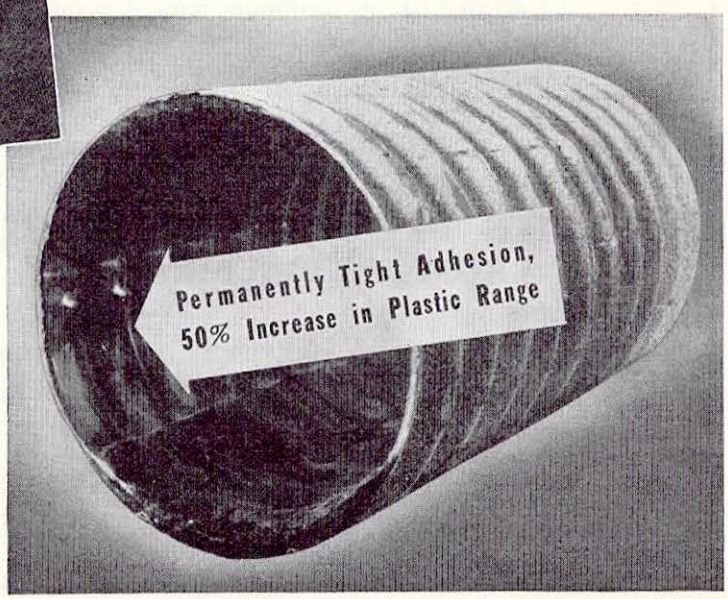
● When Armco first introduced Paved Invert Pipe with *Asbestos Bonding*, railway engineers were immediately impressed with its possibilities. Now, in order that you may actually test this product to your own satisfaction, we have prepared a limited number of flat, 3″ x 5″ samples.

These samples are cut from Armco Ingot Iron sheets and are coated with the same special bituminous material used on Paved Invert Pipe. On one side the bituminous coating is applied directly to the galvanized surface. On the opposite side, the coating is actually "*bonded*" to the sheet by means of asbestos fibres, embedded in the galvanizing.

Send for one of these free samples today. Compare the coating on both sides for adhesion . . . plastic range . . . corrosion resistance. Then, you'll understand why *Asbestos Bonding* assures an even greater degree of permanence for your railway drainage installations. Address the Ingot Iron Railway Products Co., Middletown, Ohio, or Berkeley, California.

MAKE THIS SIMPLE PEN KNIFE TEST

On the "unbonded" side—you can scrape away the bituminous coating and expose bare galvanizing. *On the "bonded" side*—the coating clings much more stubbornly and no bare galvanizing can be exposed.



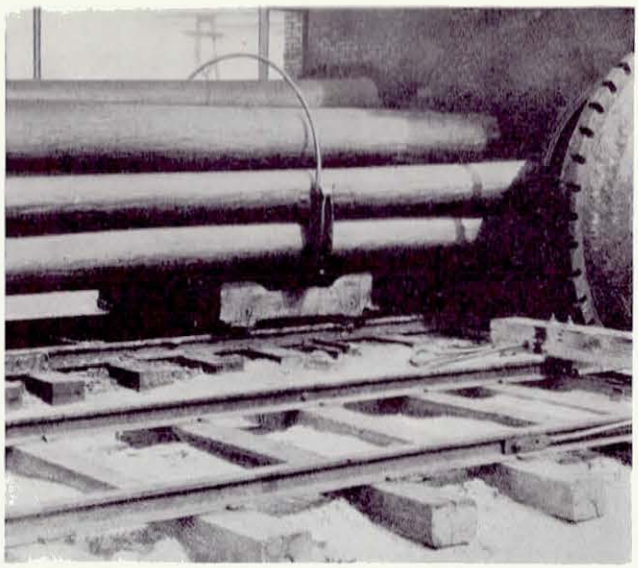
ARMCO

ASBESTOS BONDED

ARMCO PAVED INVERT PIPE

for Dependable Railway Drainage

DEPENDABLE PILING



for **BRIDGE CONSTRUCTION**

For nearly half a century Railroads have relied upon "WOOD PRESERVING" Treated Timber Products in construction, improvement and maintenance of their Railway Roadbeds, Bridges, Terminals, Docks and other fixed Properties.

All types of bridge material are subject to two kinds of destructive action—load stresses and exposure to the elements. Bridges and other structures built with "WOOD PRESERVING" adequately pressure treated piling and timber materials at low additional first cost give maximum service life at minimum annual maintenance expense.

THE WOOD PRESERVING CORPORATION KOPPERS

THE WOOD PRESERVING CORPORATION

KOPPERS BUILDING . . . PITTSBURGH, PENNA.

SALES OFFICES

Baltimore, Md.
Boston, Mass.
Charleston, S. C.
Chicago, Ill.
Denver, Colorado
Houston, Texas
Kansas City, Mo.
Memphis, Tenn.

AYER & LORD DIVISION CHICAGO, ILL.
CENTURY DIVISION PITTSBURGH, PA.
CAROLINA WOOD PRESERVING CO. CHARLESTON, S. C.
NATIONAL LUMBER & CREOSOTING CO. TEXARKANA, ARK-TEX.

SALES OFFICES

Montgomery, Ala.
New York, N. Y.
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Reed City, Mich.
St. Louis, Mo.
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Pullmanite Journal Boxes

REDUCE MAINTENANCE COSTS

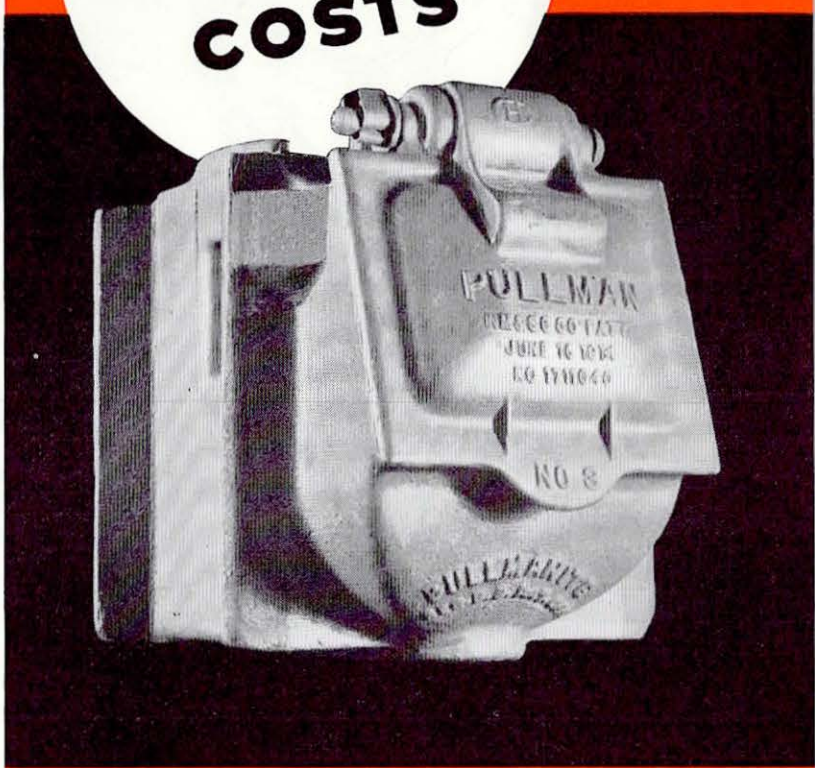
Pullmanite Journal Boxes have an average life of more than twice that of ordinary journal boxes, as shown by accurate service records.

Cost of maintenance is greatly reduced because of the fewer replacements necessary. The slow-wearing qualities of the Pullmanite Journal Box also reduce truck maintenance by preventing the tipping of bearings and wedges . . . and cause smoother riding cars.

Pullmanite Journal Boxes are made of a special wear-resisting metal developed especially for this purpose by Pullman engineers . . . and, there has never been a failure of a Pullmanite Box in service. Thousands are in use on the deluxe trains of the country.

★

A decorating department is maintained for the creation of modern and pleasing passenger car interiors for equipment built or remodeled by this Company.



PULLMAN-STANDARD
FURNISHES REPAIR PARTS AND EQUIPMENT

—FOR FREIGHT CARS

Chilled tread wheels . . pressed steel parts . . drop forgings (center plates, wedges) . . miscellaneous car forgings . . underframes . . steel sides and doors . . containers.

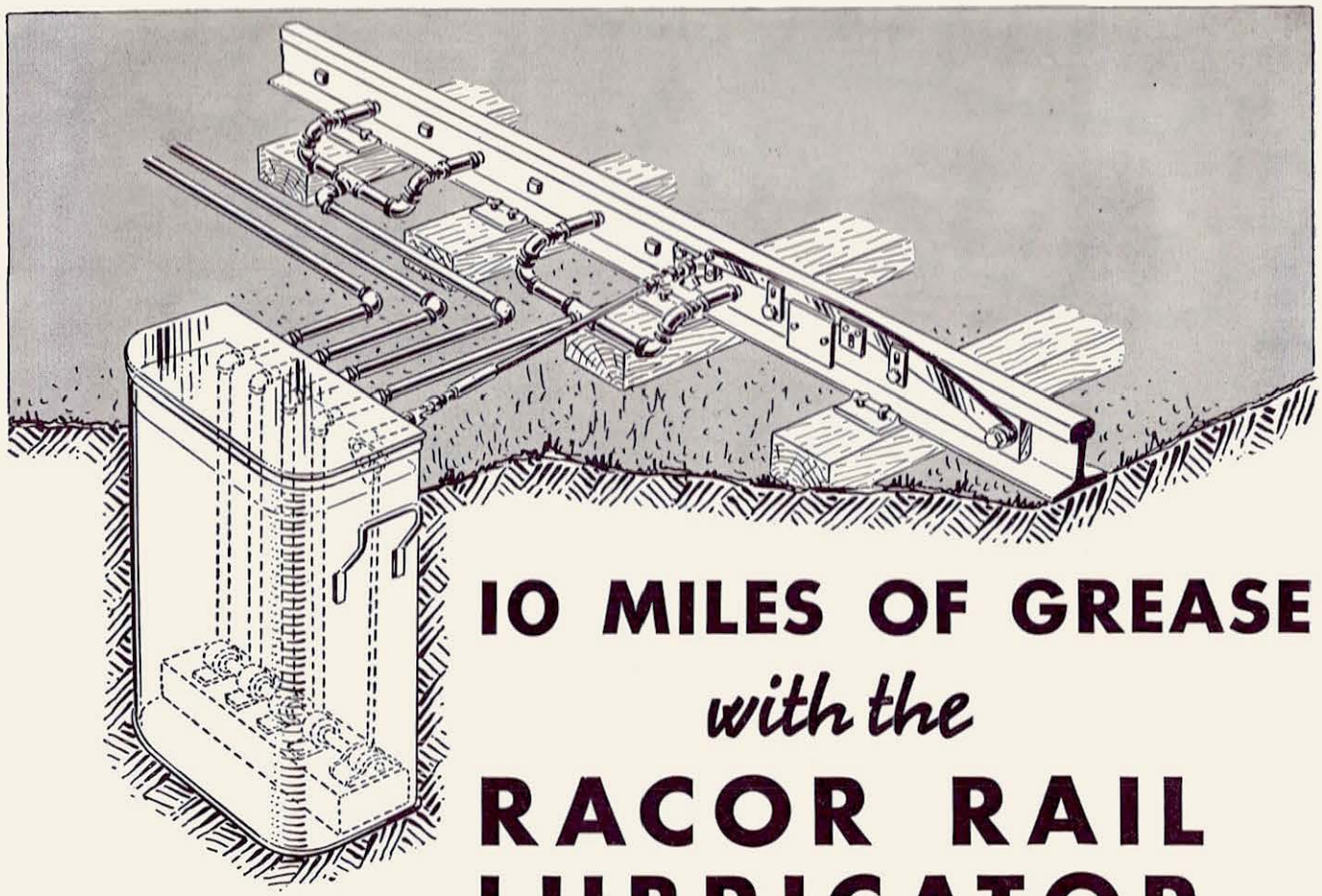
—FOR PASSENGER CARS

Air conditioning . . inside finish . . platform and anti-rattling devices . . pressed steel parts . . equalizers . . mounting and turning steel wheels . . centering devices.

PULLMAN-STANDARD
CAR MANUFACTURING COMPANY

CHICAGO • PITTSBURGH • WASHINGTON, D. C. • NEW ORLEANS • CLEVELAND
HOUSTON • BALTIMORE • BIRMINGHAM • NEW YORK • WORCESTER, MASS.

San Francisco . . . Sales Representative . . . Latham McMullin, Russ Building



10 MILES OF GREASE *with the* RACOR RAIL LUBRICATOR

Extensive tests over a period of years have demonstrated that the Racor Rail Lubricator will protect curves as far as ten miles from its point of installation without wasting the lubricant on tangent track. . . . . .

Four gear pumps, actuated by a ramp, deliver the lubricant through eight grease pipes to the chamber between the delivery plate and the rail.

Distributors on the delivery plate deflect the lubricant so that it is forced out of the delivery slot in a continuous line. The grease is thus picked up by the side of the flange in such a manner that the flange retains the maximum amount of lubricant on the surface coming in contact with the high rail of a curve and a minimum amount is wasted.

The operating parts of the Racor Rail Lubricator are of substantial construction, with flexible connections, and require only periodical inspection to see that the grease reservoir is filled and the few operating parts exposed to the weather are kept oiled.

RACOR

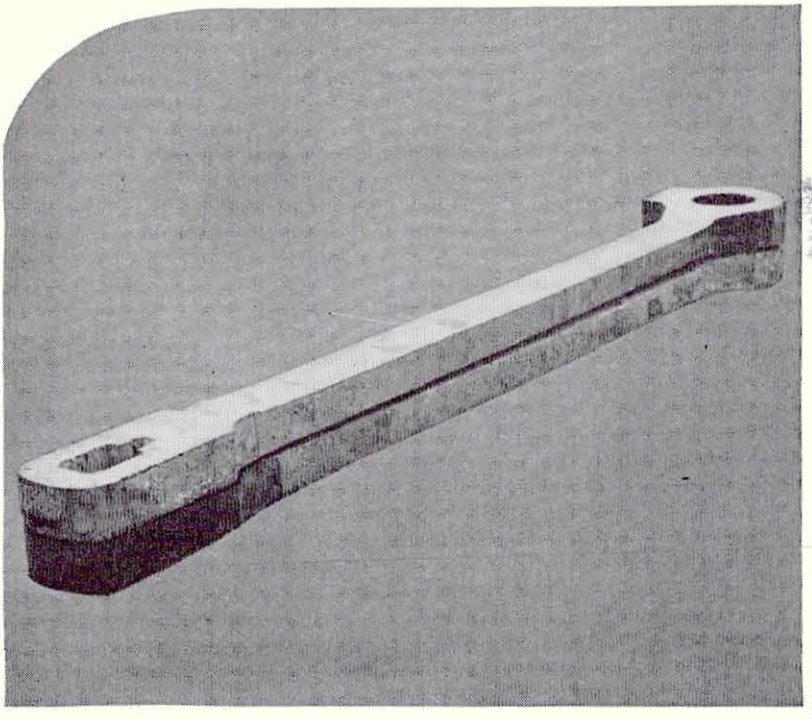
RAMAPO AJAX CORPORATION

RACOR PACIFIC FROG AND SWITCH COMPANY
CANADIAN RAMAPO IRON WORKS, LIMITED

General Offices: 230 Park Avenue, N. Y.

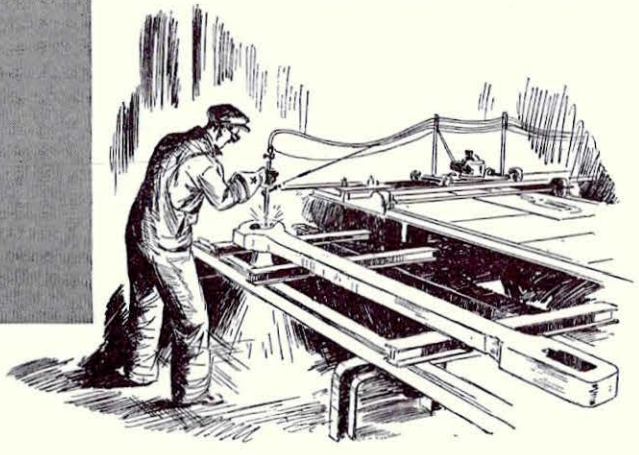
Racor Works: Hillburn, New York · Niagara Falls, N. Y. · Chicago, Ill.
East St. Louis, Ill. · Superior, Wis. · Pueblo, Col. · Los Angeles, Cal. · Seattle, Wash. · Niagara Falls, Ont.

OXY-ACETYLENE SHAPE-CUTTING *Reduces Locomotive Rod Costs*



Locomotive main rods after cutting to shape on Oxweld Shape-Cutting Machine.

Oxweld Shape-Cutting Machine cuts crank pin opening on end of main rod.



Locomotive main and side rods are two of the many railroad parts fabricated economically by Oxweld Oxy-Acetylene Shape-Cutting Machines. One shop has shape-cut over 600 rods during the last few years resulting in substantial savings for the road. Similar economies are being effected by railroads in the oxy-acetylene shape-cutting of steel parts for new and rebuilt rolling stock as well as for locomotives.

Oxweld Railroad Service can help you organize an economical shape-cutting program which will simplify the fabrication of parts required for new and old equipment. Oxweld clients benefit by the more than twenty years of experience and research of this organization in railroad welding and cutting applications. The majority of Class I railroads have been Oxweld contract customers for many years.

OXWELD RAILROAD SERVICE

THE OXWELD RAILROAD SERVICE COMPANY

Unit of Union Carbide and Carbon Corporation

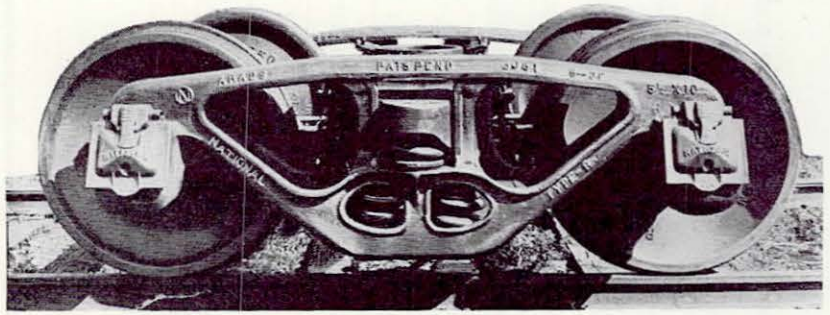
NEW YORK: Carbide and Carbon Building

UCC

CHICAGO: Carbide and Carbon Building

NATIONAL Type B TRUCKS

LIGHTER No Spring Plank



IT'S just good sound business to specify National Type B Trucks for your freight cars because you save money in so many directions. They render not only a superior service but actually have lower operating and maintenance costs.

The simplified design means fewer parts to buy and maintain. The reduced weight permits increased revenue loads. The quick wheel changes speed-up and reduce the cost of wheel and axle repairs.

That keen railroaders have found them a splendid investment, is evidenced by the numerous repeat orders. Investigate. You cannot afford to pass up these worthwhile savings.

NATIONAL MALLEABLE AND STEEL CASTINGS CO.

General Offices: CLEVELAND, OHIO

Sales Offices: New York, Philadelphia, Chicago, St. Louis, San Francisco

Works: Cleveland, Chicago, Indianapolis, Sharon, Pa., Melrose Park, Ill.

Canadian Representatives: Railway and Power Engineering Corporation, Ltd., Toronto and Montreal

SAFE Right-of-Way is *fenced* Right-of-Way

THE modern tendency toward increasing speed requires, more than ever before, an added measure of safety. Stock claims, injuries, and loss of life can be reduced and eliminated by proper fencing of the right-of-way.

The most economical right-of-way protection is offered by American Railroad Fence and Banner Steel Posts. The use of National Expanding Anchor End and Corner Posts (dirt set) will give you sturdy, economical, long-lived fencing which meets the specifications of the American Railway Engineering Association.

Further protection against costly claims will result from the use of strong fence properly placed in yards; around shops and buildings.

American Railroad Fence is made from rust resisting Copper Bearing Steel with an even coating of galvanizing as a full measure of protection against time and weather. The fence is made stronger and longer lasting by the famous American Hinge Joint which has the flexibility necessary to resist the weight and pressure of live stock.

We will be glad to talk over your fencing problems with you and to discuss further how costly claims can be reduced. Further information will be mailed to you on request.

AMERICAN RAILROAD FENCE *and* BANNER STEEL POSTS

AMERICAN STEEL & WIRE COMPANY, *Chicago - New York*
COLUMBIA STEEL COMPANY, *San Francisco*
TENNESSEE COAL, IRON & RAILROAD COMPANY, *Birmingham*
United States Steel Products Company, New York, *Export Distributors*

UNITED STATES STEEL

KOPPERS PRODUCTS AND WHERE THEY APPLY IN THE RAILROAD FIELD	ROOFING MATERIALS	WATERPROOFING	ROAD TARS	CREOSOTE	LUMINO PAINT	LOCOMOTIVE FRONT END PAINT	BITUMINOUS PAINT	DISINFECTANTS INSECTICIDES
ROAD BEDS				✓				
LOCOMOTIVES						✓	✓	
STATIONS	✓	✓		✓				✓
SHOPS	✓	✓		✓	✓		✓	✓
BRIDGES		✓	✓	✓	✓		✓	
TUNNELS		✓	✓		✓			
DRIVEWAYS			✓					
POWER HOUSES	✓	✓		✓	✓		✓	
CONCRETE STRUCTURES		✓			✓		✓	
GRADE CROSSINGS			✓					
CATTLE PENS				✓				✓

KOPPERS CAN HELP THE RAILROADS CUT THIS $5,500,000 ANNUAL BILL

It has been estimated that $5,500,000 is spent annually in normal years by the railroads of this country for the maintenance of their roofs and the purchase of materials for new roofs.

This company . . . which has helped many railroads to cut millions of dollars from their tie replacement expenses . . . can also help railroads cut down this roofing expense.

The way to cut this cost is to make roofs last longer. Flat roofs of coal tar pitch and felt do last longer. In fact, we bond roofs of this type for 10, 15 and 20 years. Many roofs of the same type have lasted 40 and 50 years.

Let us send you detailed information about roofs of Koppers Coal Tar Pitch and Tar-Saturated Felt. Send the coupon below.

KOPPERS PRODUCTS CO., Koppers Building, Pittsburgh, Pa.

Roofing • Waterproofing • Dampproofing • Creosote • Tarmac for Paving • Tar Base Paints

KOPPERS

KOPPERS PRODUCTS CO., Pittsburgh, Pa.

Send me information on ☐ Roofing ☐ Waterproofing ☐ Road Tars ☐ Creosote ☐ Lumino Paint ☐ Front End Paint ☐ Bituminous Paints ☐ Disinfectants and Insecticides

Your Name..... Title.....

Address.....

BOLSTERS AND SIDE FRAMES READY FOR SHIPMENT

4 DECADES of SERVICE to the AMERICAN RAILROADS

Enriched by this experience, the American Steel Foundries occupies an outstanding position as a manufacturer of cast steel products used by the transportation industry.

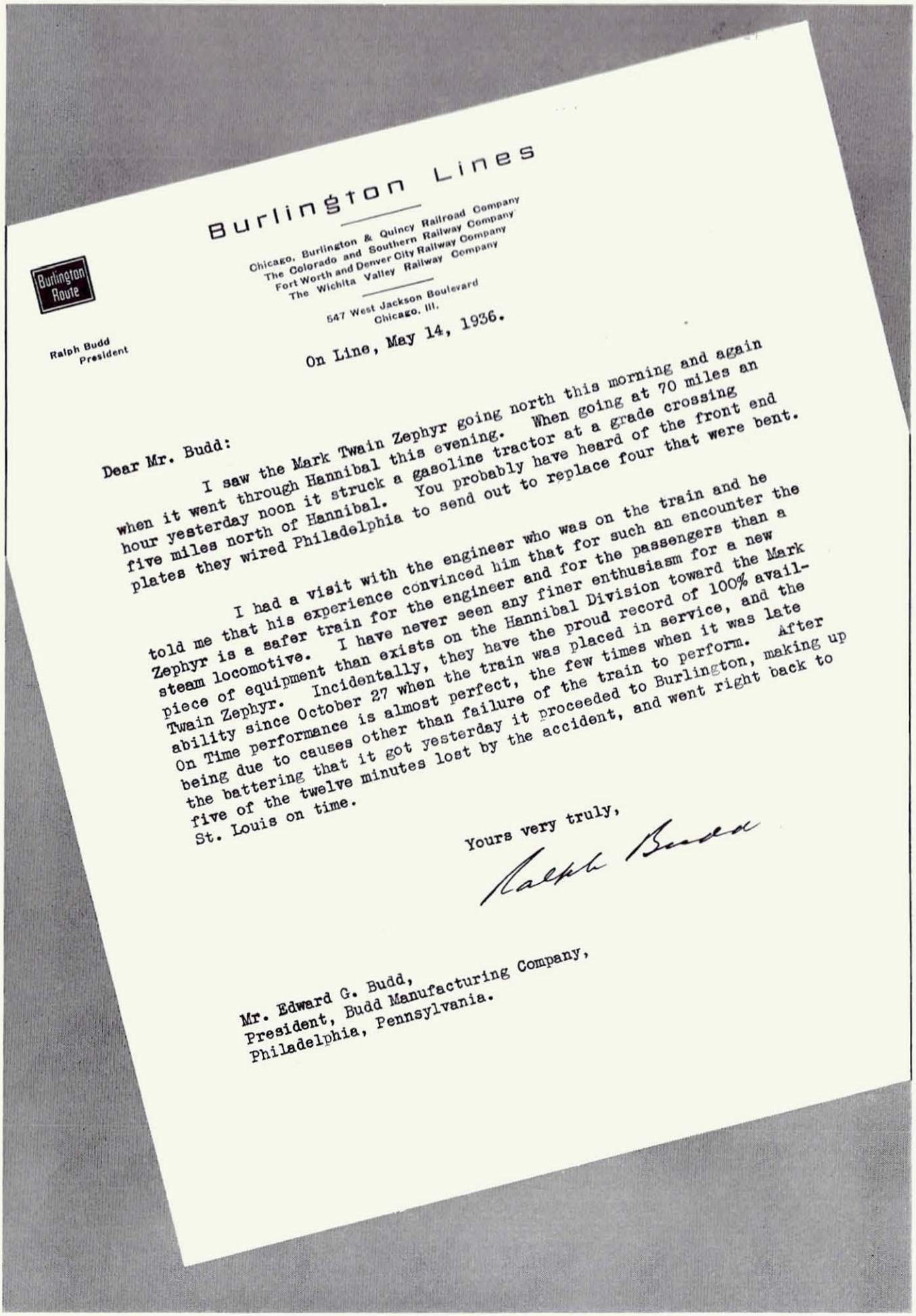
Every modern facility, combined with the skill of metallurgists and foundrymen, plus rigid laboratory control and scientific engineering, assure uniform quality of product and correct design.

American Steel Foundries' capacity and service have kept pace with the ever increasing needs of the railroad industry, insuring prompt shipment from strategically located plants.

Thus the users of American Steel Foundries' products have a positive guarantee of excellence and the knowledge that such products will fully meet every requirement of the most exacting specifications.

AMERICAN STEEL FOUNDRIES

NEW YORK CHICAGO ST. LOUIS



Burlington Lines

Chicago, Burlington & Quincy Railroad Company
The Colorado and Southern Railway Company
Fort Worth and Denver City Railway Company
The Wichita Valley Railway Company

547 West Jackson Boulevard
Chicago, Ill.

Burlington Route

Ralph Budd
President

On Line, May 14, 1936.

Dear Mr. Budd:

I saw the Mark Twain Zephyr going north this morning and again when it went through Hannibal this evening. When going at 70 miles an hour yesterday noon it struck a gasoline tractor at a grade crossing five miles north of Hannibal. You probably have heard of the front end plates they wired Philadelphia to send out to replace four that were bent.

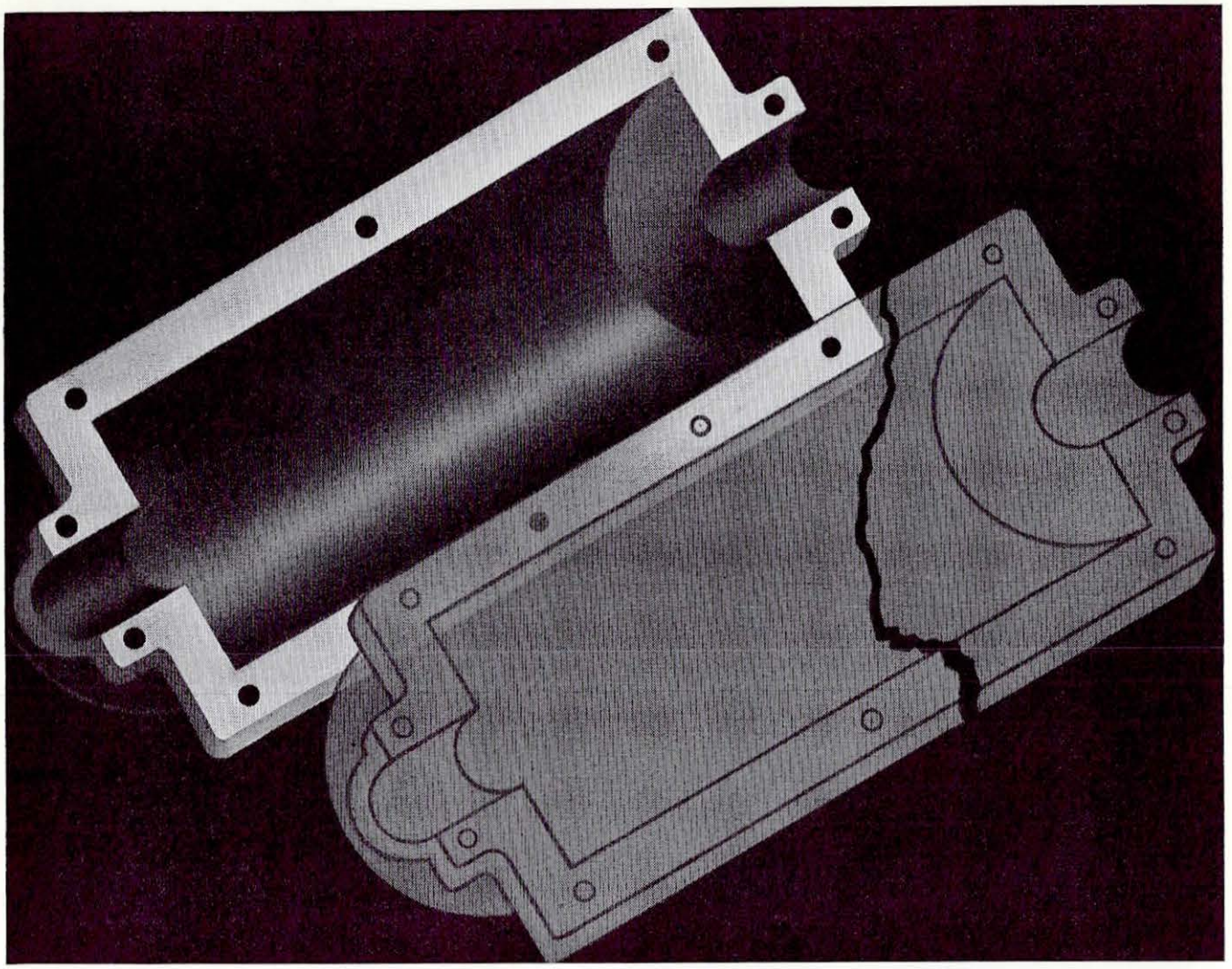
I had a visit with the engineer who was on the train and he told me that his experience convinced him that for such an encounter the Zephyr is a safer train for the engineer and for the passengers than a steam locomotive. I have never seen any finer enthusiasm for a new piece of equipment than exists on the Hannibal Division toward the Mark Twain Zephyr. Incidentally, they have the proud record of 100% availability since October 27 when the train was placed in service, and the On Time performance is almost perfect, the few times when it was late being due to causes other than failure of the train to perform. After the battering that it got yesterday it proceeded to Burlington, making up five of the twelve minutes lost by the accident, and went right back to St. Louis on time.

Yours very truly,

Ralph Budd

Mr. Edward G. Budd,
President, Budd Manufacturing Company,
Philadelphia, Pennsylvania.

"At last! . . . and MOLY did it!"



WHERE is the foundryman who has not encountered difficulties with malleable-iron castings due to primary graphite — especially in parts where coring prevents rapid cooling of heavy sections?

A founder of housings for a piece of apparatus subject to high-pressure loads had such a problem. Coring was complicated and sections were heavy. Rejects were 100%.

The addition of .35% Moly corrected the trouble after everything else had failed. Rejects ceased. Moly not only made production possible, but made the castings even better than had been anticipated.

Your cast-iron problems may be different. They may involve matters of increased toughness, or resistance to heat, or merely the production of high-test iron. In any case, it will pay you to investigate Moly — "industry's most versatile alloy."

Our technical book, "Molybdenum," is full of practical information. Our periodical news-sheet, "The Moly Matrix," keeps you informed as to the latest developments in Moly irons and steels. They and the help of our experimental laboratory are yours for the asking. Climax Molybdenum Company, 500 Fifth Avenue, New York City.

MOLY

CLIMAX Mo-lyb-den-um

CUTS COSTS

CREATES SALES

Air as cool and clean as this . . .

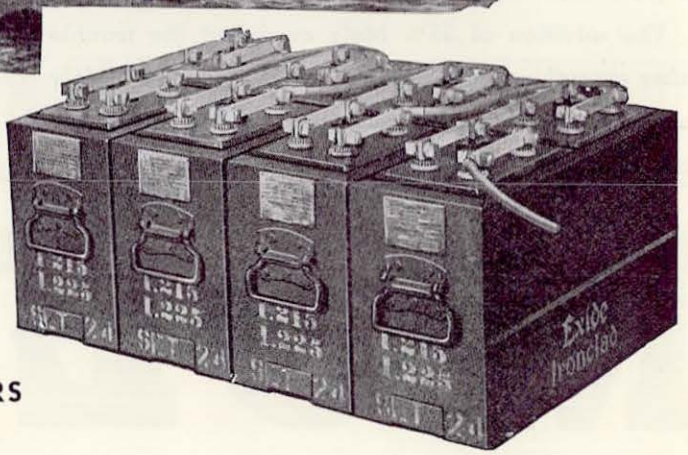
. . . WINS PASSENGERS FOR AIR-CONDITIONED TRAINS

THERE are few things as popular as comfort . . . especially in traveling. But be sure your passenger-car air-conditioning delivers comfort in fact as well as in name . . . and does so at sufficiently low cost to produce substantial revenue.

No single factor is of greater importance than the batteries you use. They must be able to handle with ease the prolonged heavy load of air-conditioning equipment. They must be able to do so, not only when first installed, but throughout their useful life. They must be economical — trouble-free — easily and simply maintained.

These are the qualities that have enabled Exide-Ironclad Batteries to play an important part in the development and success of air-conditioning. That explains why Exide-Ironclad Batteries can improve your own air-conditioning service and cut costs.

THE ELECTRIC STORAGE BATTERY COMPANY
Philadelphia
The World's Largest Manufacturers of Storage Batteries for Every Purpose
Exide Batteries of Canada, Limited, Toronto



Exide
IRONCLAD BATTERIES
WITH EXIDE MIPOR SEPARATORS
"MIPOR," Reg. U. S. Pat. Off.

Lift your scrapping into the PROFIT *column*

with

AIRCO Oxygen, Acetylene *and* AIRCO-DB Apparatus

Cutting scrap to size greatly increases its value and in many cases enables a profit to be chalked up where formerly a loss was shown. And the use of clean-cutting, economical equipment is another means of gathering profits from your scrap cutting.

Airco Railroad Customers have reduced their scrapping costs to a minimum through the combination of Airco oxygen and acetylene, Airco-DB apparatus and Engineering Assistance.

AIR REDUCTION
SALES COMPANY
General Offices: 60 East 42nd St., N. Y. C.
DISTRICT OFFICES in PRINCIPAL CITIES

A NATION-WIDE WELDING and CUTTING SUPPLY SERVICE

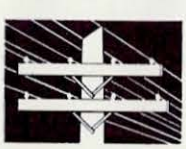
"To quickly, conveniently and satisfactorily meet the electrical requirements of American Railroads" —Graybar

... our definition of Service

✓ *Train Dispatching Equipment* . . . Check up on your train dispatching equipment. Bring it up to date with a new Western Electric selector key . . . jack box . . . selector . . . loudspeaker.

✓ *Motors and Control* . . . Turn to Graybar for dependable, standard motors and control. Meet any motor need quickly and conveniently from a Graybar warehouse.

✓ *Wire and Cable* . . . For vital circuits—dependable wire and cable from Graybar. All kinds—including Western Electric Lead Covered Cable.



✓ *Line Construction Materials* . . . Pole line construction materials may be ordered, shipped, and assembled economically and conveniently from Graybar.

✓ *Lamps and Lighting* . . . A complete selection of quality lamps, fixtures and glassware is readily available from Graybar. Meets exacting railroad needs.

✓ *Underground Materials* . . . Graybar is the logical source of every type of conduit for railroad use—also conduit fittings, tools, transformers, accessories.

If it's electrical . . . Graybar supplies it. Graybar brings you what you want . . . *where* you want it . . . when you want it. Meets every railroad need.

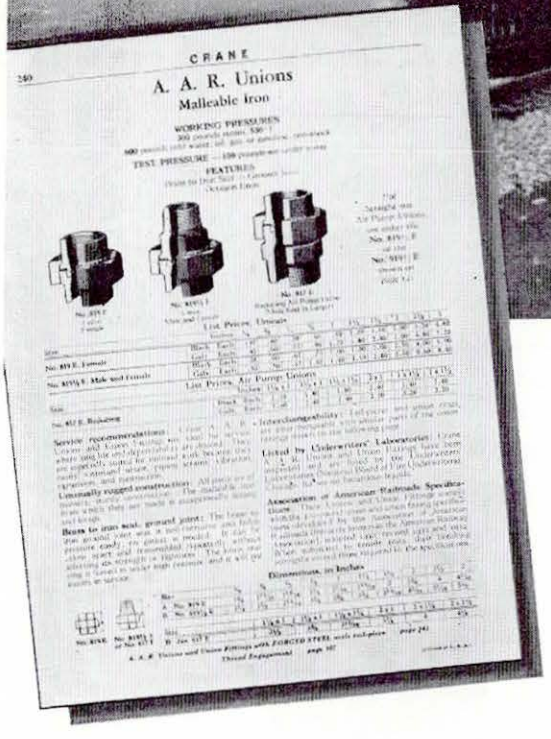
Graybar has grown up with American railroading. Our long, friendly experience in meeting railroad problems is at your service today.

No matter what the item . . . train dispatching . . . electric motors . . . wire and cable . . . lighting fixtures and lamps . . . conduit . . . or any other electrical item—Graybar will deliver it quickly, conveniently and satisfactorily.

GraybaR

OFFICES IN 79 PRINCIPAL CITIES. EXECUTIVE OFFICES: GRAYBAR BLDG., N. Y.

WHERE *Dependability* IS *Paramount*


CRANE

A. A. R. Unions

Malleable Iron

WORKING PRESSURES

TEST PRESSURE

FEATURES

List Prices, Unions

List Prices, Air Pump Unions

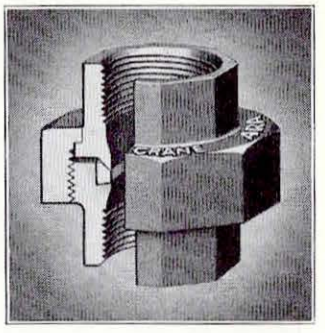
Service recommendations

Unusually rugged construction

Brass to iron seat, ground joint

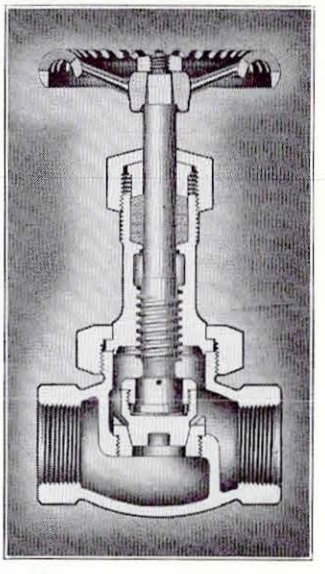
Listed by Underwriters' Laboratories

Dimensions, in Inches



(*Above*) Crane A. A. R. Unions, described and listed on page 240, New Crane No. 52 Catalog

(*Below*) Crane A. A. R. Globe Valve



● Crane A. A. R. Globe, Angle and Turret Valves and A. A. R Unions and Union Fittings place at the service of every railroad that dependability and stamina which only the use of quality materials and precision workmanship make possible.

In addition Crane offers a piping service which results in greater simplicity, fewer joints and the use of less material and labor. This assistance in reducing the number of joints and, hence, the chance of leakage, plus the saving of time and labor, is invaluable. Use this service whenever you plan new installations or revamp old ones. It is yours for the asking through the Crane branch or distributor near you.

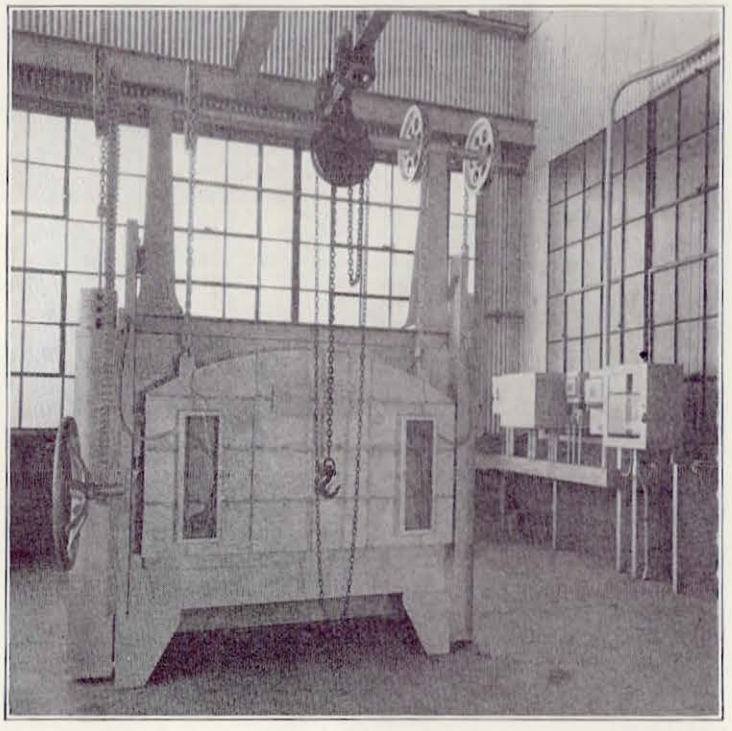
CRANE

CRANE CO., GENERAL OFFICES: 836 SO. MICHIGAN AVE., CHICAGO, ILL. • NEW YORK: 23 W. 44TH STREET

Branches and Sales Offices in One Hundred and Sixty Cities

RAILROAD VALVES, FITTINGS AND PLUMBING FIXTURES

METALLURGY *and the* CHILLED CAR WHEEL



Experimental Electric Car Wheel Heat Treating Furnace equipped with Automatic Time and Temperature control of both Heating and Cooling

THE maximum physical properties of a carefully balanced and melted car wheel iron can be realized only by means of a well designed heat treating cycle, based upon proper research. The views show some of the equipment utilized by the A.M.C.C.W. Research Staff for its investigations on heat treatment of chilled car wheels so as to further improve the enviable service of chilled car wheels.

MEMBERS

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American Car & Fdry. Co.
Bass Fdry. & Machine Co.
Canada Iron Foundries, Ltd.
Canadian Car & Fdry. Co.
Central Car Wheel Co.
Cleveland Production Co.
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Marshall Car Wheel & Fdry. Co.
Maryland Car Wheel Co.
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Southern Wheel Co.
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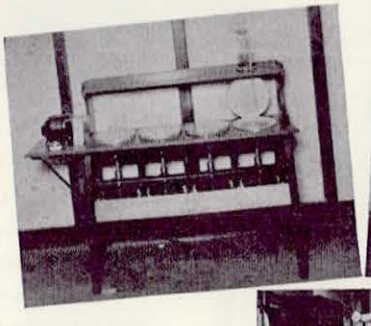
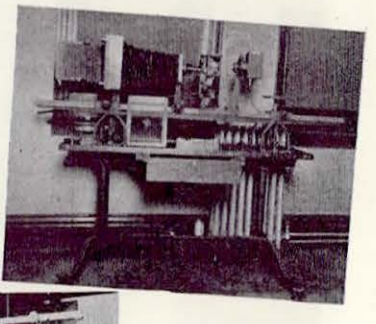


Metallographic Polishing Machine



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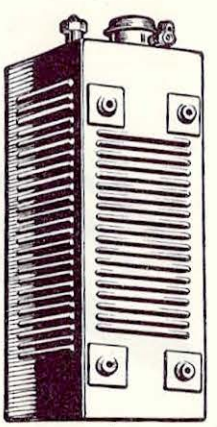

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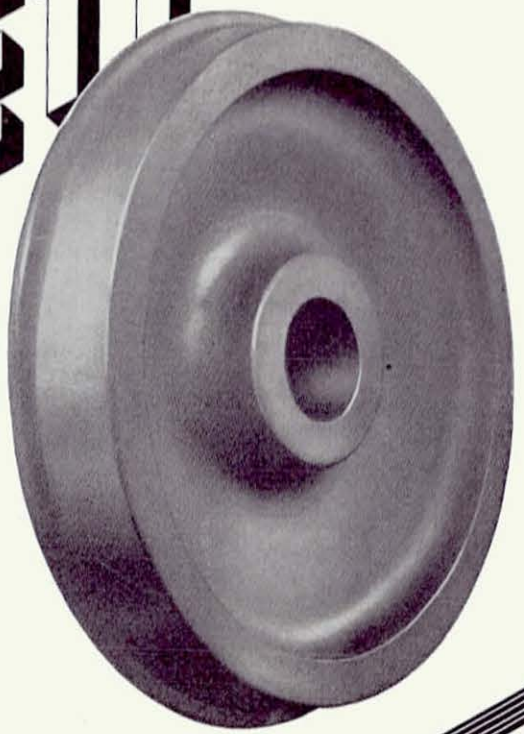

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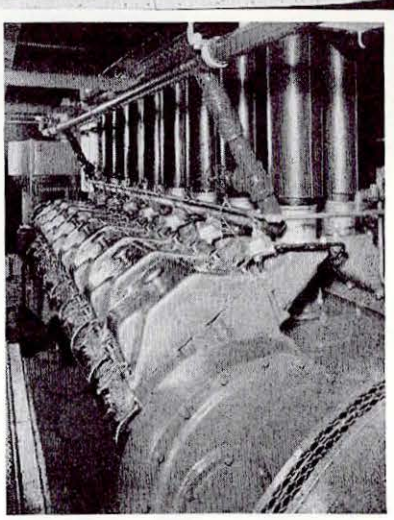

A close-up of the Winton Diesel 1200 h.p. V Type 16 cylinder Engine which drives the Green Diamond. Bantam Needle Roller Bearings used on all Wrist Pins.

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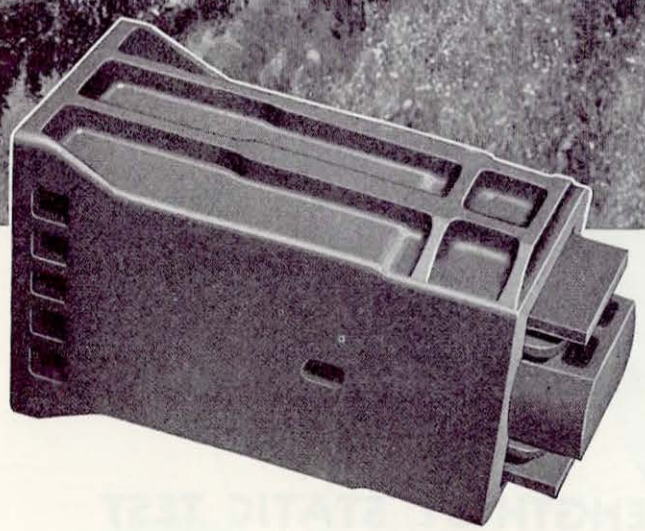

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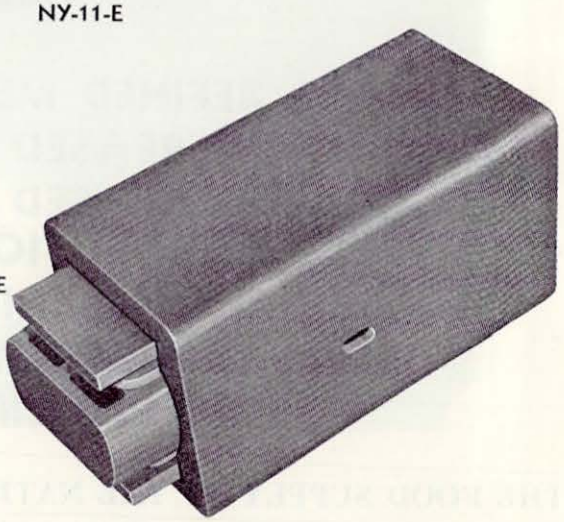
FRICTION DRAFT GEAR
NY-11-E



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DIVISION V—MECHANICAL
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Certificate of Approval for Draft Gear
Number SEVEN
Manufacturer EDGEWATER STEEL COMPANY
Type Designation of Draft Gear EDGEWATER TYPE B-32-KA
Date of Certificate JUNE 20, 1933
Issued under A. R. A. 1931
This certificate is evidence that the Coupler and
mittee of Division V, Mechanical, American Railway
tested the above type of draft gear and approves it as
gear specifications of the American Railway Associati
effect at this date. Appended hereto, and forming part o
for the purpose of identification, are photographs and
this type of gear.
Certified report of test of this gear, dated 6-10-33
in the office of the Secretary of Division V, Mechanical, Americ
way Association.
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Division V, Mechanical
Secretary
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B-32-KA

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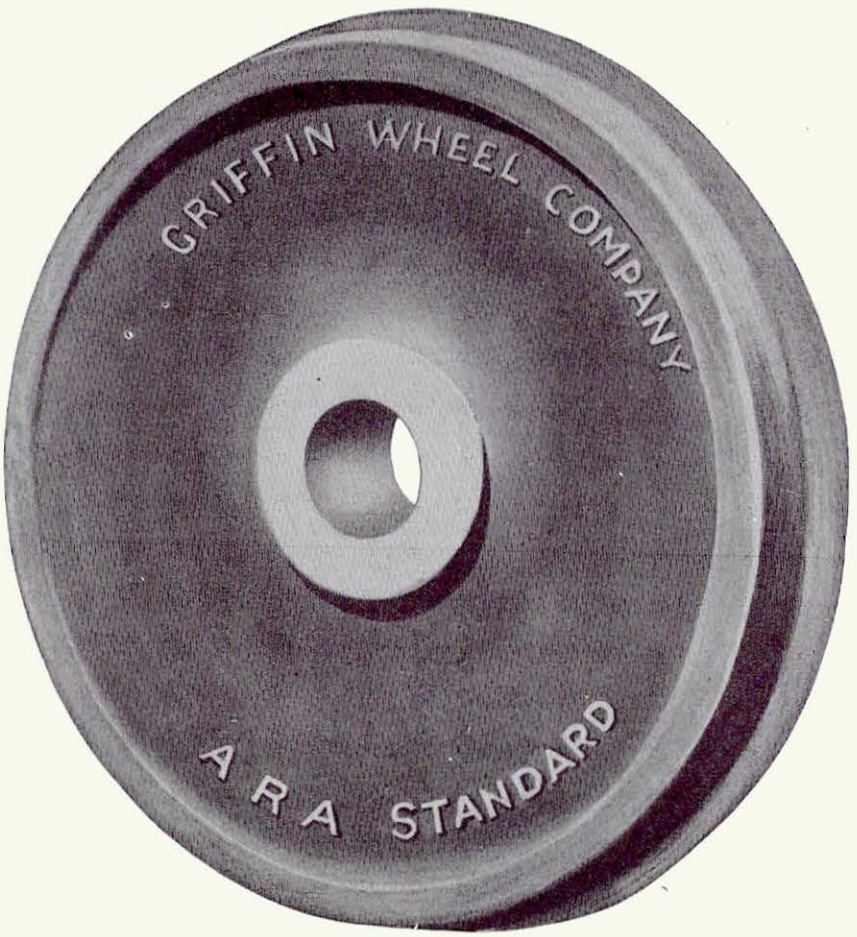

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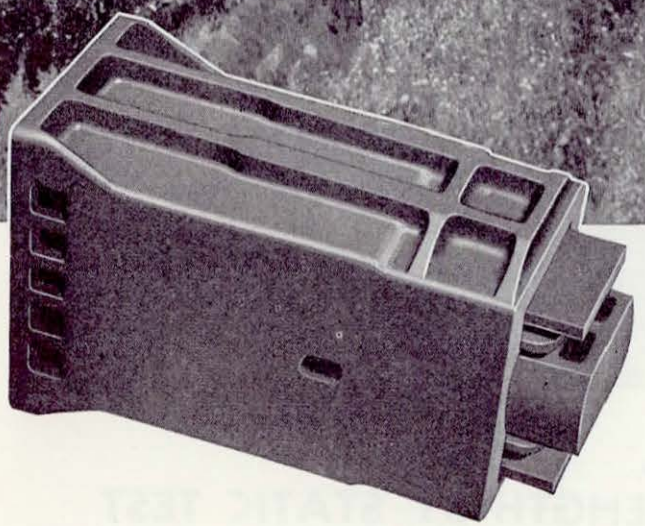

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FRICTION DRAFT GEAR
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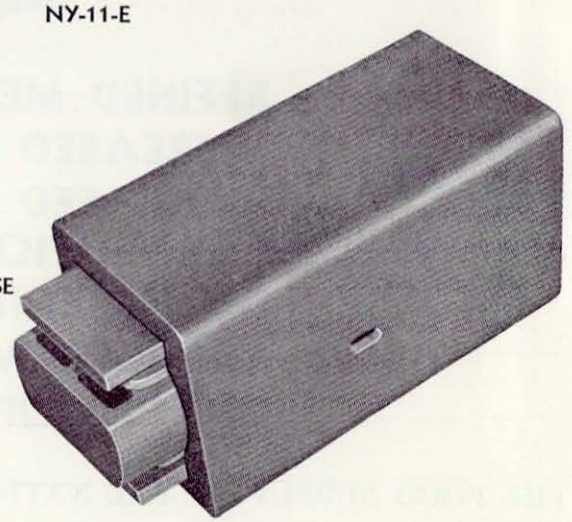

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CARDWELL FRICTION
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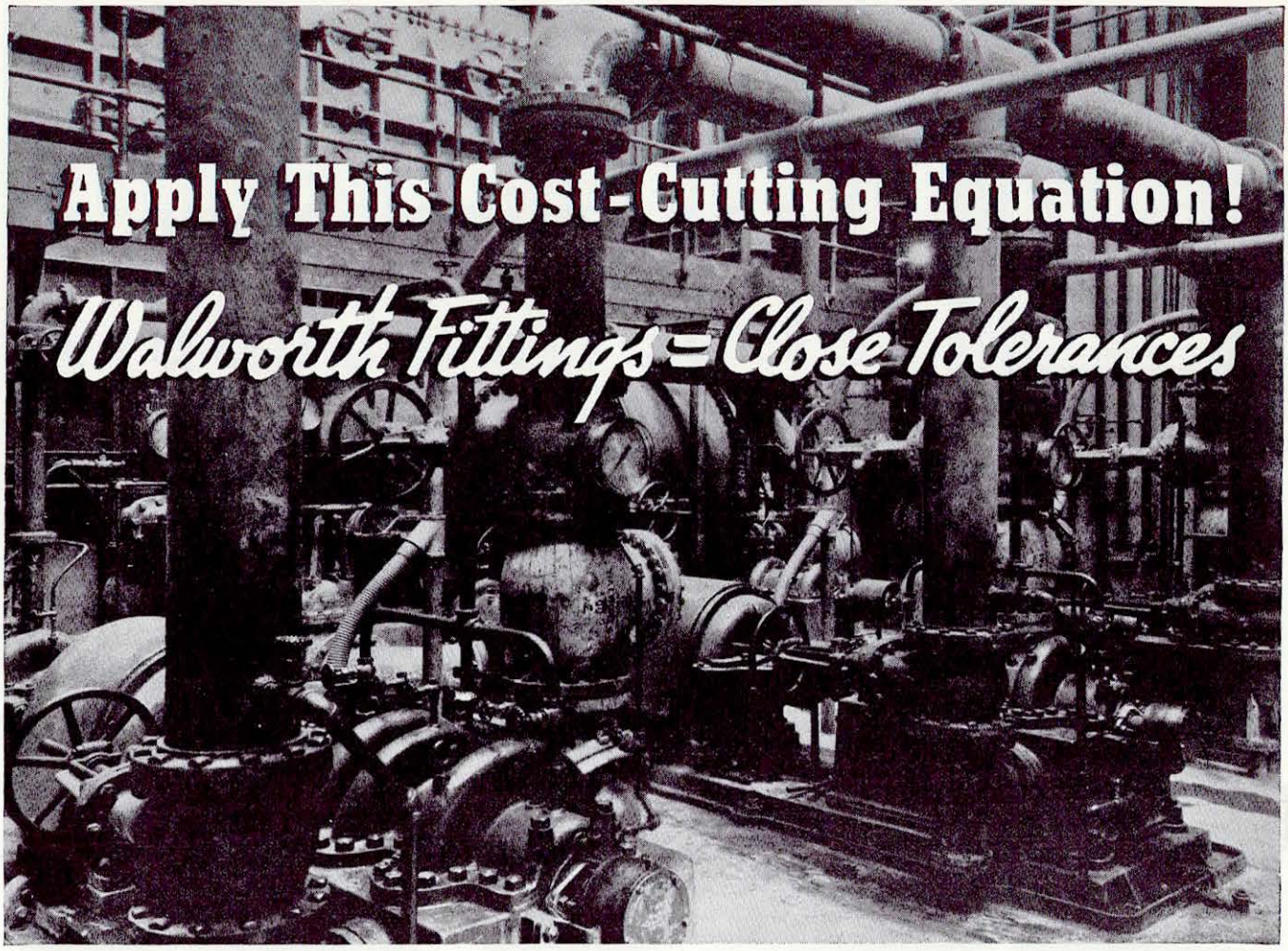

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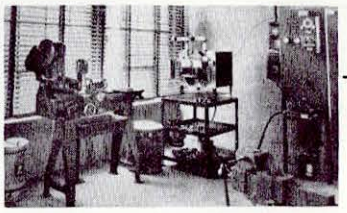

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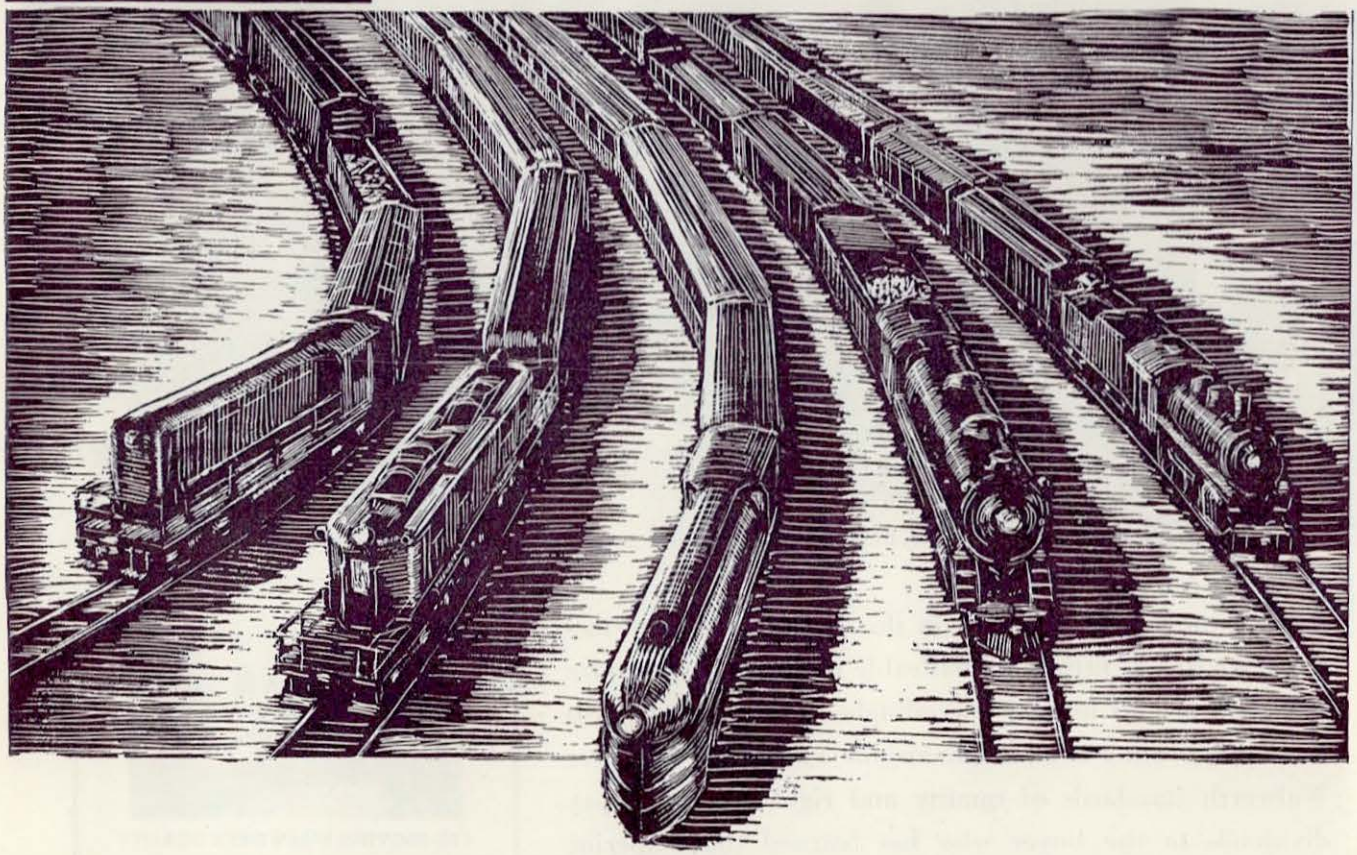

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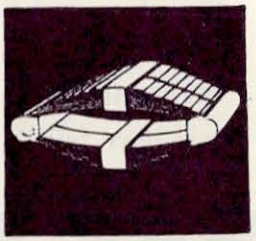

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RAILWAY STEEL SPRING DIVISION

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RAILWAY AGE

The Railroads, the Drouth and the Economics of Scarcity

The principal need of the railways is for more traffic —especially freight traffic. The principal essential to a large increase of their freight traffic is a large increase in production of commodities, both agricultural and industrial, especially the latter. Therefore, any policy, whether of government, agriculture, industry, or labor, that is based on an economics of scarcity is contrary to their interests.

Again, as two years ago, the New Deal policy of fostering scarcity by restricting production in agriculture is being aided by a widespread drouth. The co-operation of nature with the artificial measures of the New Deal threatens a shortage of foodstuffs, abnormal increase in the cost of living, and retardation of recovery. Consequently, there is a vigorous renewal of attacks by anti-New Dealers upon the New Deal economics of scarcity, its tendencies and effects.

The economist who studies current problems, and prevalent and proposed policies regarding them, from a railroad standpoint has advantages over those who study them from a political, agricultural or industrial standpoint. Not being directly subject to foreign competition at home or abroad, the railroads have no reason for having selfish predilections or prejudices for or against high protective tariffs. Not being a productive industry themselves, they have no reason, good or bad, for imagining that they can gain by any temporary or permanent restriction of any kind of production. They can see plainly that they have everything to lose and nothing to gain by the application, temporarily or permanently, of an economics of scarcity in agriculture and industry—or, vice versa, everything to gain and nothing to lose by an economics of abundance.

Tariffs, Agriculture and Restriction of Production

Consider, then, the matter of tariffs. From a railroad standpoint it is easily apparent that the present tariff policy of the United States is itself based upon the very economics of scarcity that most industrialists denounce when applied to agriculture, and that it has been one of the principal causes of the depression and its protraction. Before the war this country was a great *debtor* nation, and had to export more than it imported to pay the interest on its debts to foreigners. Its excess exports consisted largely of agricultural products.

Since the war it has been the greatest *creditor* nation that ever existed, and has needed to import much more than before the war if it were to be able to export even as much. By advancing its tariffs in 1930, contrary to every consideration of sound economic policy, it has curtailed its imports, and thereby inevitably and automatically curtailed its exports, especially of farm products. Inability to sell its surplus farm products abroad caused supply of them to exceed demand, and the accumulation of surpluses that reduced farm prices and curtailed the ability of farmers to buy from industry. This automatically reduced buying from and production in industry, and caused adoption of government measures to reduce production by agriculture. Thus an economics of scarcity has helped both to cause the depression and to protract it to the present time.

And the policy of restricting agricultural production to the demands of the domestic market is threatening to have one unexpected and very disastrous effect—that of causing, for the first time in history, shortages of agricultural products in the United States. When normally a large surplus of agricultural products was produced for export a decline in their production in this country merely caused a decline of exports of them, and left enough to supply the domestic demand. Under a policy of restricting normal agricultural production to normal domestic demand, a short crop necessarily will be one insufficient even to supply the domestic demand, and will cause something resembling famine in a country capable, under an economy of abundance, of normally producing foodstuffs far in excess of its own needs.

Economics of Scarcity in Industry

Whatever the agricultural or industrial economist may see, it is plain to the railroad economist that the prevailing economics of scarcity is fraught with peril to every class of the people of the United States, and that it was not originated by the New Dealers or by leaders of agriculture, or by leaders of labor unions, but by leaders of industry, and has had, and still has, its strongest, most prejudiced believers and most aggressive and effective practitioners among them. It

had the beginning of its application in a protective tariff policy based upon the assumption that we must establish and maintain a scarcity of imports, and which did not recognize that scarcity of imports necessarily meant also scarcity of production of commodities for export. Because of our financial relations with foreigners this policy did little harm before the war; but because of the great change in our financial relations with foreigners resulting from the war it has become since the war a cause of disaster to our farmers, and, thereby, indirectly, a cause of disaster to industry, transportation and their employees.

It is all very well for industry and transportation to continue saying, "We must have prosperity in agriculture in order to have prosperity in industry and transportation;" but when are they, and especially industry, going to recognize plain facts, cease to make unsound economic principles of their ancient selfish prejudices, and do something to make possible a prosperous agriculture, industry and transportation—for, over periods of years, they must all prosper or be depressed together?

Economics of Scarcity and Railway Traffic

To the restoration of a full and lasting prosperity it is essential that an economics of scarcity be replaced by an economics of abundance in all branches of production—industrial and mining as well as agricultural. Protective tariffs so high that they shut out imports and thereby shut in exports that otherwise would be produced and profitably sold are the very cornerstone of our prevailing economics of scarcity and the principal cause of our perennial and apparently insoluble farm policy. Monopoly policies and practices of both industry and labor that keep abnormally high the wages, prices, and freight rates that must be paid by the 60 per cent of our population that does not derive its income from the wages, prices and rates of industry and transportation are also very important parts of our prevailing economics of scarcity. An economy of abundance would have as its objectives the maximum practicable increase in the production of every kind of useful commodity, maximum practicable increase in the buying power of all classes, and maximum practicable increase in the means, machinery and otherwise, of producing consumable and usable products. Every part of the prevailing economics of scarcity—agricultural, industrial and labor—is based upon the false assumption of a danger of general over-production, with the result that, because of restrictions imposed on production by policies of government, agriculture, industry and labor, we still have, six years after the panic of 1929, a total production and railway freight traffic almost 35 per cent less than in 1929, and are lagging in recovery behind almost all the rest of the world.

Economy of Scarcity or Abundance?

The problem of replacing our prevailing economy of scarcity with an economy of abundance is not primarily one for government to solve. It is primarily one for leaders of finance, industry and transportation to solve. Of course the New Deal, which is based mainly on an economics of scarcity, should be beaten. Its perpetuation would mean perpetuation of policies of scarcity and of policies of government regimentation which are necessary to carry out an economics of nationalism and scarcity. But what does industry offer in place of it? A continuation of policies of high protective tariffs, monopoly practices and prices, and monopoly working hours and wages? This paper has commented favorably upon some declarations of the Republican platform; but what kind of economics is it to declare for more insistent demands for payment of foreign debts to this country, and at the same time for tariff policies to restrict the imports of foreign goods in which alone can debts owing to this country be paid?

A railway paper may seem a strange place in which to publish so many discussions of broad economic problems as have appeared in these columns within recent years. It may seem to some that we should confine our discussions to the more specific problems of the railroad industry. But traffic is the blood of the railroad industry, the increase of its traffic is its most important problem, and government, business, agricultural and labor policies that curtail its traffic impoverish its blood and threaten it with chronic anemia.

Enormous Potential Production and Traffic

There is an enormous potential demand for products and buildings which, if given opportunity to become an effective demand, would afford the railways a much larger volume of traffic than they ever have had, and fully restore their earning, employing and buying power. This great potential demand for production, building and transportation is being prevented from becoming effective by prevalence of government, business, agricultural and labor policies based on a generally accepted economics of scarcity. The railways and their employees, the railway manufacturing industry and its employees, have a vital interest in the issue of an economy of scarcity versus an economy of abundance, and in the policies involved in it. Its determination will determine whether the railways will have a scarce or an abundant traffic, how many men they will be able to employ, what wages they will be able to pay and how large purchases they will be able to make from manufacturers. From the standpoint of railways, their employees and manufacturers for railways it is not merely a theoretical, but a very practical bread-and-butter issue.

They should be able to see plainly how a restriction of agricultural production adversely affects railway traffic. They should also see plainly that any and every policy of government, industry or labor that restricts industrial production similarly affects railway traffic and railway employing and buying power, and, in their own selfish interest, should be in the front ranks of

those battling for the replacement of policies that are restricting production and traffic of all kinds with policies that will stimulate production and traffic of all kinds.

Dramatizing the Railroads

When it was suggested in the spring of 1935 that the western railroads should announce a "Railroad Week" and stage a celebration of it throughout their territory, many of those experienced in railway affairs regarded the project with skepticism. Their doubts were confounded by the results. The extent of the public interest and participation was very gratifying. The same thing has been true of the celebration of "Railroad Week" from July 13 to 18, 1936. It has been demonstrated that great public interest can be aroused by dramatizing the railroads.

The time chosen in 1935 for the celebration of "Railroad Week" was fortunate. It was preceded by some of the most interesting developments in railroad history. During the three preceding years the railroads had taken the initiative in developing not only one of the greatest improvements ever made in passenger service, but also a great new industry—that of air-conditioning. They had also recently begun developing and exploiting new kinds of light, streamlined, high speed Diesel and steam-powered passenger trains by the most modern and skillful engineering and propaganda methods. Air-conditioning, new types of trains and unprecedented speeding up of service, all skillfully and adequately publicized, appealed to the popular imagination and aroused a public interest in railroads and railroading that have enabled those who have handled the "Railroad Week" celebrations within the last two years to make them events of real practical importance. They have helped cause a more advantageous public interest and sentiment regarding the railroads than have existed since the early days of railroad construction; and they have increased travel by rail and the earnings derived from it.

The success of the "Wings of a Century" show at the Century of Progress Exposition in Chicago, and of the subsequent dramatization of innovations and improvements in service and of the railroad industry as a whole, has indicated new ways of effectively conducting railway sales and public relations work. It can hardly be said that there has been in the past, or is likely to be in future, too much serious public discussion of the regulatory, competitive and economic problems of the industry. They are problems that must be solved if railway earning, employing and buying power are to be restored. But too much credit cannot be given to those who have had the vision to anticipate the benefits that would be derived from dramatizing the industry, the imagination to conceive the right means to use, and the skill in the use of these means that has resulted in the accomplishment of their purpose. The dramatization of the industry affords a greatly improved background for the discussion of its problems.

We have entered a new era in railroad transportation, not only as respects the service rendered, but also as respects the means used for adequately "selling" it to the public. Salesmanship begins with the production of something that can be sold and includes every method of selling that will maintain and enlarge the market for it. Recent experience shows that successful railroad selling includes forms of showmanship that have heretofore been lacking. The principal requisite to any kind of practical success is the skillful adaptation of means to ends. Any fool can tell the ends that should be attained. It takes genius to adopt and carry out the right means for attaining desired and important ends. May the railways continue to develop the genius required to adapt their product—transportation—and their methods of selling it to the indispensable end of increasing their sales!

* * * *

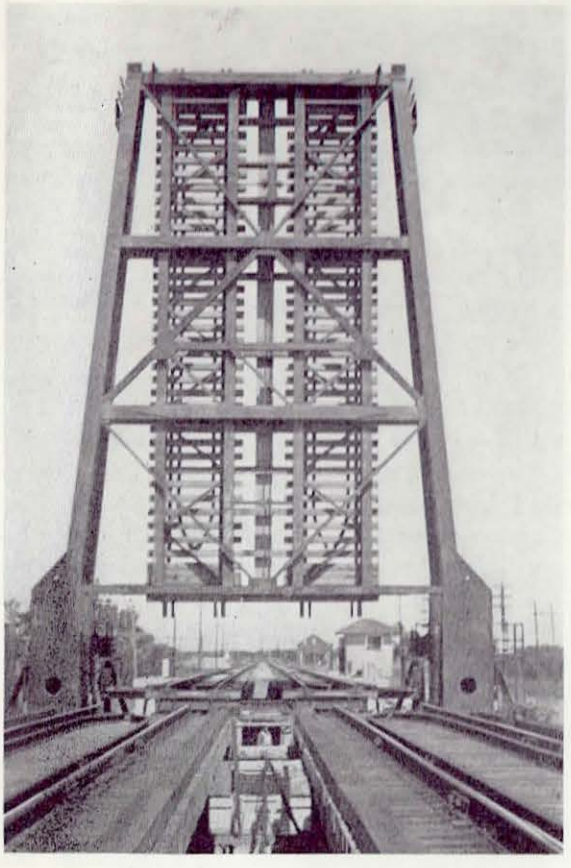
New Colonial-Type Combined Passenger and Freight Station of the Chesapeake & Ohio at Williamsburg, Va.

Built in connection, and in complete harmony with the restoration of this early American community, the station is constructed of face bricks which are reproductions of the original hand-made bricks employed by the early settlers, and all lighting fixtures are of colonial design

F. E. C. Erects First All-Welded Bascule Span

This road, which has pioneered in electric-arc-welded construction, has also installed a similar fixed bridge of deck plate-girder type

By T. H. Gardner
Structural Engineer, Florida East Coast, St. Augustine, Fla.



All-Welded Bascule Span in Open Position

THE Florida East Coast has the distinction of having erected the first all-welded movable-span railway bridge in the world, in addition to which it also has the only all-welded fixed span in main-line service in this country. The decision to undertake this form of fabrication was not made suddenly, for recognizing that the application of electric-arc welding in the fabrication of steel structures has been developed to the point where it is safe, practicable and economical when used in connection with proper design and execution, this road has been using electric-arc welding in steel bridges in gradually increasing degree for several years.

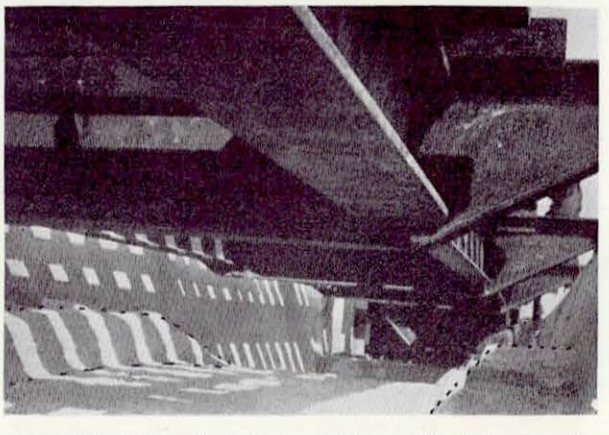
Beginning with minor repairs, the application of electric welding was gradually extended until it was decided to apply it to a double-track movable-bridge span under high-speed main-line traffic, which was completed several months ago. In 1931, the American Welding Society published a report of numerous tests of electric-arc-welded connections. The uniform results obtained indicated safe allowable unit working loads. To supplement this information and to secure direct and more intimate knowledge of the welding technic, the engineering department of the Florida East Coast prepared and tested a large number of specimens, and the results of these tests indicated that with proper design and execution, electric-arc welding was safe for railway bridge structures. The application of this method on this road has been a progressive development however, each step being utilized to check design and execution as a basis for further use.

Pacet Channel Viaduct

One of the water openings between two of the keys on the Key West extension, is crossed by a bridge seven miles long, consisting of five miles of deck-girder spans, with one through-truss swing draw span and two miles of 35-ft. concrete arches. Several years ago the arch adjoining the steel spans developed several cracks, and in 1933, the progression and nature of the cracks indicated the necessity of reinforcing or renewing this arch. Consideration was given to the expedients of: (1) Lining the arch ring; (2) rebuilding the arch; and (3) placing a permanent open-deck girder span between the spandrel walls to carry the live road, leaving the present arch in place. Study developed that the girder would be the most economical.

Any steel span set in between the spandrel walls and above the arch ring needed to be rather shallow to avoid raising the deck. Plans for a 48-ft. welded deck girder were sent out, inviting proposals on the fabrication, and also on an alternate riveted span to meet the same design load and clearances. Several bids were received for both types, but a proposal on the welded span, being the lowest, was accepted.

Temporary steel was designed and constructed to provide for traffic, for removal of the fill and other necessary field work, this structure being welded. It consisted of stringers framing into 24-in. floor beams which rested on top of the spandrel walls. These were made as shallow as practicable at the ends by cutting out part of the web



Temporary Steel Over Arch in Pacet Channel Viaduct—Floor Beams Resting on Parapet Walls Supported the Stringers

and bending up the bottom flangers. Stiffeners, which also served as connection plates for the stringers, were placed at the point of change in the direction of the flanges. The stringers in the end panel adjacent to the existing girder span were spread out and shallowed at the ends in a manner similar to the floor beams, to allow them to be set on the top flange of the girder. Large bearing plates were welded to the floor beams. The steel was assembled and reamed before shipment, and all connections were bolted in the field. The alterations were made to the arch and the permanent steel span then placed without any delay to scheduled traffic, while the temporary span, which was made of second-hand material, was kept for possible future use on other arches.

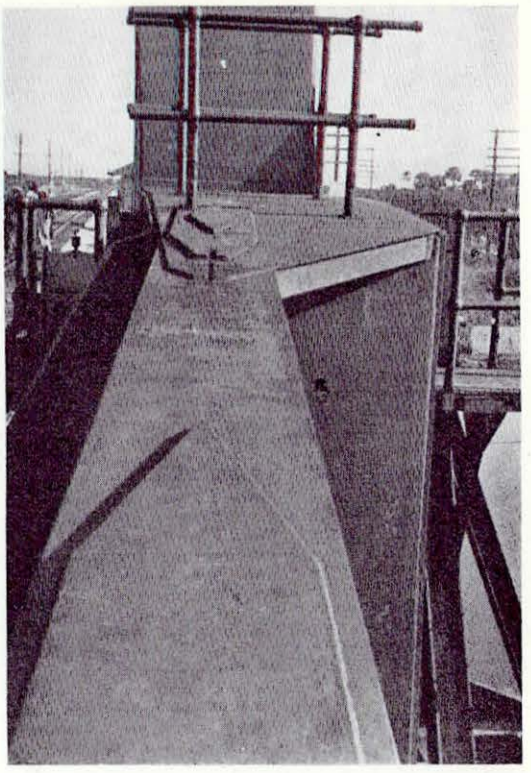
The welded span is composed of two 36-in., 300-lb. girder beams with a 14-in. by 2-in. cover plate on top and a 14-in. by 1-in. plate on the bottom. Lightweight 30-in. I-beams were used for cross beams, while built-up welded structural-steel construction was employed for pedestals. This was the first all-welded bridge to be used on a main line in this country.

Welded Double-Track Bascule Span

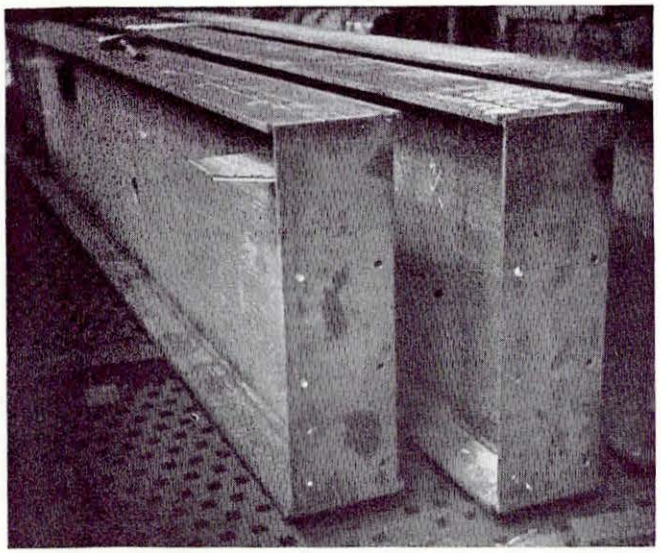
In 1925, the Florida East Coast constructed a double-track bridge across the Loxahatchee river near Jupiter, Fla., which included a riveted double-track bascule span, providing a 50-ft. horizontal clearance over the river channel, with deck-girder approach spans at both ends. In February, 1935, a through passenger train ran into the heel end of the bascule draw while it was open, pushing the span off the foundation and demolishing it.

At the same time, the 60-ft. deck-girder spans under both the northbound and southbound tracks adjacent to the toe end of the bascule span were badly damaged, when the toe end of the bascule span swung around and struck them laterally at the ends. The girder span under the southbound main suffered the worst damage and was shortened to about 50 ft. and set in as a temporary channel span under the northbound main track. The span under the northbound main was blocked up temporarily, thus permitting traffic to be resumed over the northbound track. On this span, the top flanges were bent, one girder being bent and twisted out of plumb about 10 in., and the other about 5 in.; the end cross frame was practically torn out; the top and bottom laterals were bent, and some were torn loose from their connections.

To allow this span to be used to carry traffic for some time, the top flanges were cut through to the vertical leg of the flange angles in two zones of the bend. Slices were then cut out on one side so that the girders could be straightened, after which the cuts were butt-welded and reinforcing cover plates welded on. A temporary end cross frame was then welded on and some of the laterals were renewed, while others were cut in two, straightened and spliced. The end stiffeners on one girder were bent so badly that it was necessary to cut off the outstanding legs for a considerable distance and replace them with plates. As the top flange angles and cover plates were bent down on one side near the end, the entire half of the flange, excepting the vertical leg of the flange angles, was cut off and the material cut out was replaced by plates welded in position. This welding was done economically under traffic.



Top of One of the Girders Tapering Cover Plates Eliminated Abrupt Change in Section

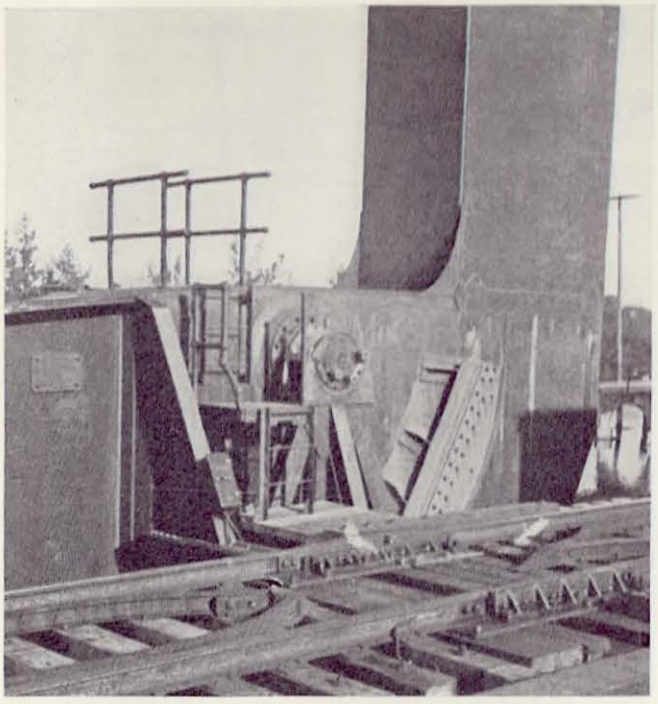


Stringers, Showing Wide Connecting Plates

Machinery Reused

While the bascule span was demolished, the gasoline-engine power unit, the trunnion shafts and some of the machinery and castings were undamaged and were reused in the new structure. The reinforced concrete piers were not damaged seriously. Plans for the old riveted bascule span, including detail drawings of the structural steel and machinery, were at hand, and it was obvious that a duplication of this riveted span, or a similar welded span as an alternate, reusing the existing foundation and certain salvaged parts, would involve the least expenditure and provide for a permanent structure in the shortest time.

Plans for an alternate welded bascule span were prepared hurriedly. It was considered necessary to furnish much more detail than would ordinarily be given for riveted work, because of the lack of standardization of this relatively new type of work. Furthermore, it was desired to give sufficient detail to permit accurate estimates to be made of the cost and time required for the prompt completion of the span. This procedure provided a direct comparison of the economy of the two types, except that the proposal for the welded span of



View of Trunnion and Counterweight Box

necessity included the cost of preparing the shop detail drawings.

The estimated time required for erection complete was the same for both types. The lowest quotation submitted was for the welded span, and was submitted by an organization which had previously demonstrated its ability to execute this type of work properly. Accordingly a contract for the fabrication and erection complete of a welded structure was awarded.

Details of the Welded Structure

Some of the details of the welded bridge are as follows: Fillet welds ¼ in. or ⅜ in. were used in all members except where the details favored a deviation. It was decided to provide sufficient field bolts to care for erection stresses, Dardalet manganese-steel rivet bolts being used for this purpose, although all field connections were welded eventually. No rivets, either shop or field, were used. Obviously, certain machinery parts which it might be necessary to renew were bolted. In general, the various members were made to the same overall dimensions as before, except where economies and improvement in details made deviation desirable.

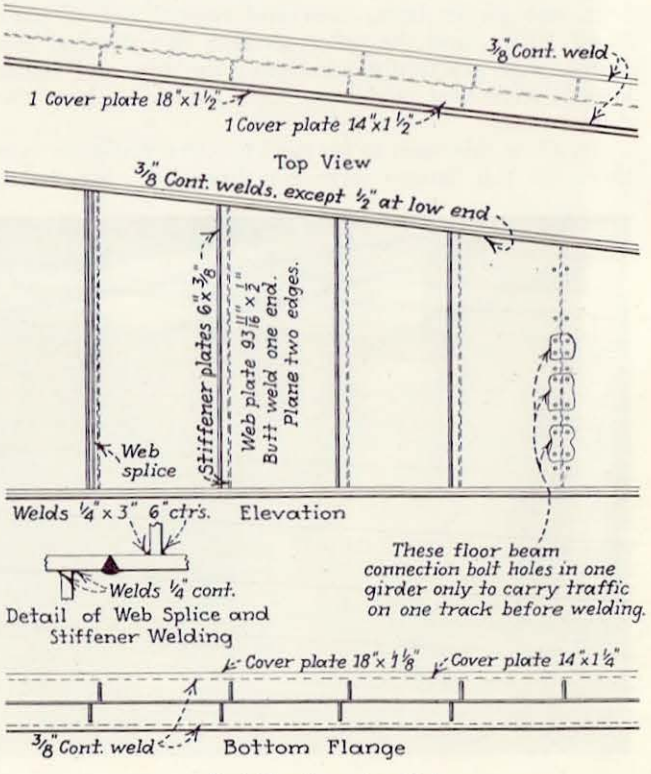
Instead of the conventional combination of two angles with cover plates, the flanges for the floor beams and main girders consist of cover plates welded directly to the webs. Where two cover plates were used, the ends of the first, or top cover plate, were tapered to a point. The length of this taper was determined by the length of two lines of ⅜-in. weld required to develop the full section of plate involved. This provided a balanced connection and eliminated abrupt changes in section, with their attendant high localized stresses. All web plates were edge-planed throughout. Stiffener plates with continuous welding were used instead of angles. Web splices were butt-welded with a single V-weld. All cover plates were ordered full length to avoid splicing. Members were amply tack welded, connected with clamps, or secured otherwise.

In the finish welding on the cover plates, two welders worked on opposite sides of the covers, keeping the welding symmetrical, and staggered the welding to avoid warping. Wires were stretched parallel to the webs and the gage distances noted at intervals to check against movement or warping while welding. Continuous welding was done on the cover plates to seal the joints and prevent moisture from entering between the contact surfaces to cause corrosion, although this required much more welding than was necessary for the stress increment. The old stringers were 40-in. built-up girders, but 33-in., 125-lb. I-beams were used in the new span. This decreased the depth and allowed the stringers to be raised, thus providing more depth for the lateral bracing. It also allowed the main girders to be raised approximately 4 in., thus providing for a better distribution of the stresses from the trunnions, in addition to providing some additional vertical clearance. The plates connecting the stringers to the intermediate floor beams were made relatively thin and wide to provide flexibility and avoid the condition of a restrained beam. Brackets for the end ties were welded to the floor beams in the shop.

H-Section Laterals

The lateral bracing in the old span was made up of two angles riveted back to back, except in one member which consisted of four angles riveted to form an H-Section. In practically all cases, these laterals were connected by a single gusset plate. In the welded span either 8-in. H-columns or 8-in. I-sections were used for laterals and these were all connected at the top and bottom flanges, thus reducing the eccentricity and providing single members that are much easier to maintain. There are some bridges on this road over salt water, which have bottom lateral bracing made up of two angles, stitch-riveted back to back, and corrosion has developed between them, distorting the angles. Although the bracing in the Jupiter span is slightly heavier than was provided before, it was considered that the additional material was justified in order to secure single members which can be cleaned, painted and maintained more readily.

In the counterweight boxes, some of the side plates were flanged to eliminate corner angles and reduce the


⅜" Cont. weld
1 Cover plate 18"x1½"
1 Cover plate 14"x1½"
Top View
⅜" Cont. welds, except ½" at low end
Stiffener plates 6"x⅜"
Web plate 93 11/16"x½"
Butt weld one end.
Plane two edges.
Web splice
Welds ¼"x3" 6" ctrs.
Elevation
Welds ¼" cont.
Detail of Web Splice and Stiffener Welding
These floor beam connection bolt holes in one girder only to carry traffic on one track before welding.
Cover plate 18"x1⅛"
Cover plate 14"x1¼"
⅜" Cont. weld
Bottom Flange

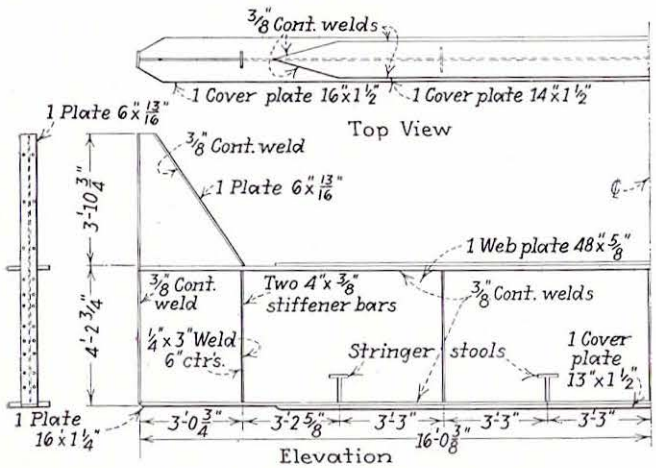
Part Elevation of a Girder

welding. Stiffening angles on the inside of the box, instead of having the leg of the angle in contact with the side plates, were generally reversed, the toe of the angle being welded to the side plates, as this arrangement gives approximately twice the section modulus for the same material.

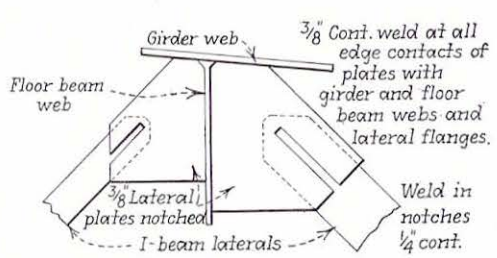
Improved Trunnion Details

The details of the packing plates around the trunnions are considered noteworthy. Formerly, there were two ¾-in. packing plates on each side of the side plates of the lower counterweight box, with a total of approximately 800 shop rivets for these packing plates alone. In the new structure, one 40-in. circular plate 1½ in. thick, was put on the outside and one 36-in. by 1½-in. circular plate on the inside of the side plates. These were beveled down at their circumference to a thickness of ⅝ in., and were fillet welded around the edge with ⅝-in. by 1¼-in. fillet welds, the face of these welds continuing the plane of the beveled edge. Holes were cut in these packing plates to accommodate a ring, welded in place, to distribute the trunnion load to them. When the boxes were completely welded, they were set up and bored, and the trunnions driven in position and bolted permanently. This detail, with approximately one-third the weight afforded a more uniform stress distribution in the connection than was provided before. The pocket for the concrete counterweight was made smaller, thus increasing its lever arm.

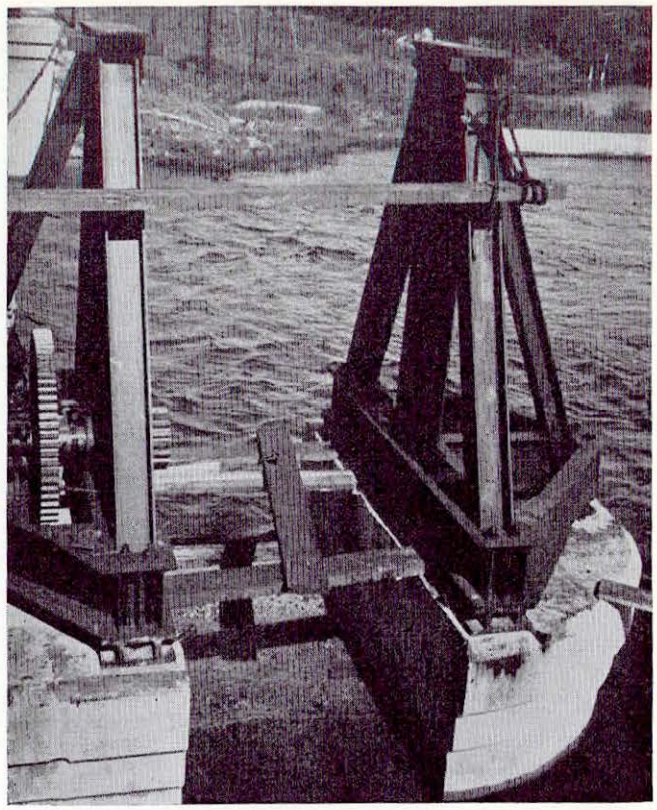
The posts in the trunnion towers were changed by substituting single sections for built-up members. For the main column, instead of using four angles and a plate, a 14-in. H-column was split and a section of the web planed off and welded to form a 14-in. by 8-in. column. Eight-inch H-column posts were used instead of a channel section consisting of two angles and a plate, while a 6-in. H-column was used instead of two angles, back to back, ⅝ in. apart. Inaccessible pockets were thus avoided. To insure accuracy, it was specified that the trunnion towers were to be milled top and bottom after complete assembly and welding. They were, of course, faced off at the top, but the accuracy obtained in fabrication did not require them to be finished on the bottom.



Half Elevation of a Floor Beam


Girder web
3/8" Cont. weld at all edge contacts of plates with girder and floor beam webs and lateral flanges.
Floor beam web
3/8" Lateral plates notched
Weld in notches ¼" cont.
I-beam laterals

Detail of Connection of Girder and Floorbeam to Tops of Laterals



Trunnion Tower in Position

Shop Assembly

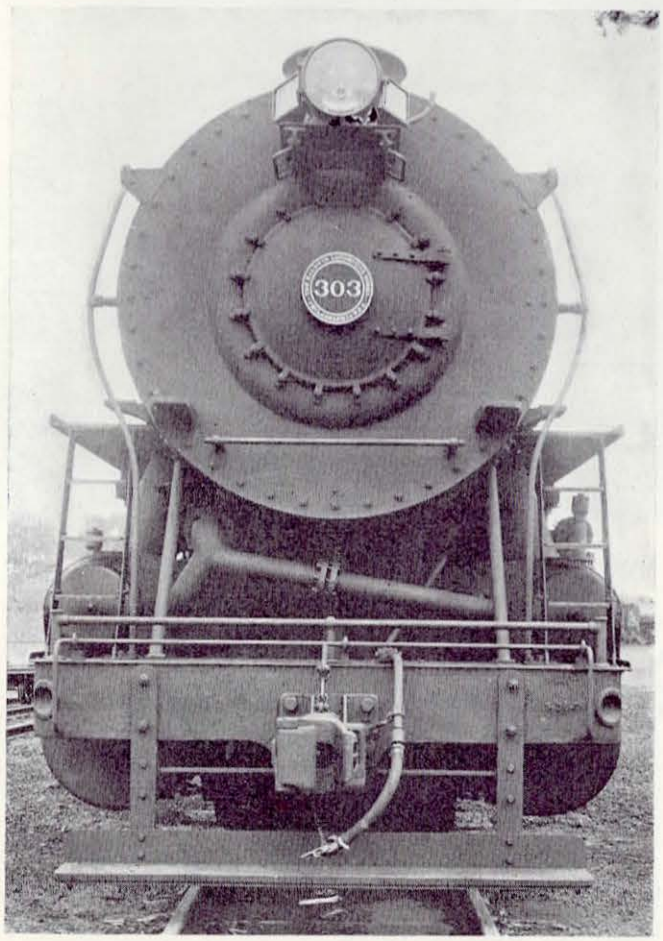
The main girders, floor beams, stringers, stringer bracing, trunnion supports and bottom counterweight boxes were assembled in the shop and the field holes reamed. The bottom counterweight was set in position and the two trunnions lined up, being checked accurately with a piano wire running through the trunnions. The box was then tacked to the main girders and this connection shop welded. A continual check was made to insure that the welding did not pull the trunnions out of line. The driving racks were bolted permanently to the rack supports and these were then set in approximate position with adjusting screws engaging lugs which were tack-welded to the side of the box. The pitch and the face of the teeth were then adjusted and the rack support shop welded to the box. The bottom counterweight box and the main girders were shipped shop-welded together with the racks and trunnions. The exact distance from the center of the span to the near face of the trunnions was checked, the same dimension being used to set the span in the field.

Erection in Closed Position

As the temporary deck channel span under the northbound track would have interfered with the setting of the floor beams of the new bascule span in a horizontal position, it was necessary to remove the temporary span, set the new span, install the new deck and place the rails in as short a time as possible. To do this, the trunnion towers were set in their permanent position and bolted to the foundation, the main girders being erected in the down position. During this time, two panels of the floor system, each including one floor beam, one panel of stringers and the bottom lateral bracing, were preassembled and partially welded in the field. When the changeover was made, the temporary span was removed,

son Thermic Syphons in the firebox. The boiler is fed by one Hancock turbo-injector located underneath the cab board on the right side, which acts as an exhaust-steam feedwater heater. On the left side the boiler is equipped with one Ohio non-lifting injector. The locomotive is fitted with a Simplex type B stoker and Firebar grates. The boiler jacket is of Cor-Ten steel, as are also the cylinder jackets.

The frames are cast steel of the bar type, bolted to the rear cast-steel cradle which also forms the foot plate of the locomotive. The cylinders and half saddles are of close-grain cast iron, which are bolted together and bolted and keyed to the frames. The cylinder heads are



Front End of the Union Railroad Locomotive

of cast steel, designed to conform to the contour of the rolled-steel piston heads.

The main driving wheels have Baldwin disc centers in which provision for adequate counterbalance is made. The main wheels are cross-counterbalanced in accordance with present practice. The front pair of driving wheels is fitted with the Alco lateral motion cushioning device. The spring suspension is arranged in two parts; the three forward pairs of driving wheels are equalized as one unit and the two rear pairs of driving wheels and the trailer truck are equalized together as the other unit. The trailer truck is of the Baldwin-Hodges type.

The crossheads operate in single-bar guides of the Pennsylvania multi-ledge type. Both the back end of the main rod and the main side-rod connection are designed to provide for the application of floating bushings. The remainder of the side-rod ends are designed for pressed bushings.

The valve motion is of the Walschaert type with a total travel of 7¾ in. The valves, which are 12 in. in diameter, operate in bushings of Hunt-Spiller gun iron and have packing rings of the same material. Piston and valve rods are fitted with King type packing. The throttle is the Glaenzer poppet type and the power reverse gear is Alco type K.

Other equipment with which these locomotives are fitted include the Schlacks force-feed lubricator for valves and cylinders, the Detroit three-feed hydrostatic Bullseye lubricator for the air pump, stoker engine and booster engine, the Unit Safety drawbar and radial buffer between engine and tender, and the Loco Valve Pilot. The locomotives are fitted with Westinghouse Schedule 8ET, air brakes with two 8½-in. cross-compound compressors.

The tenders have a short wheel base to suit the limiting turntable conditions, with four-wheel trucks front and back. The tank is built high to provide a capacity of 12,000 gallons of water and 14 tons of coal. It is rectangular in shape and is built of Cor-Ten steel plate, welded throughout. The tender frame is built of 13-in., 45-lb. channels, strongly braced, over which is laid a 2½-in. wood floor.

The tender trucks are fitted with steel-tired wheels, with spoke centers, having an outside diameter of 36 in. Incorporated in the front truck is the Franklin C-2-R-S type reversible booster with 50 per-cent cut-off. The factor of adhesion of the booster, driving through side rods on both axles, with its tractive force of 17,150 lb. and the tender loaded, is 6.35; with a one third load, 4.27, and with the tender light, 3.18.

The principal dimensions and proportions are given in the table.

General Dimensions and Weights of the Union Railroad 0-10-2 Type Locomotives

Railroad	Union
Builder	Baldwin Locomotive Works
Type of locomotive	0-10-2
Road numbers	301-305
Date built	June, 1936
Service	Switch. and transfer
Rated tractive force, engine, 85 per cent, lb.	90,900
Rated tractive force with booster, lb.	108,050
Weights in working order, lb.:	
On drivers	343,930
On trailing truck	60,430
Total engine	404,360
Tender	240,000
Wheel bases, ft. and in.:	
Driving	22—0
Rigid	16—6
Engine, total	32—0
Engine and tender, total	67—3½
Driving wheels, diameter outside tires, in.	61
Cylinders, number, diameter and stroke, in.	2—28 x 32
Valve gear, type	Walschaert
Valves, piston type, size, in.	12
Maximum travel, in.	7¾
Boiler:	
Steam pressure, lb.	260
Diameter, first ring, outside, in.	88
Firebox length, in.	120⅛
Firebox width, in.	102¼
Combustion chamber, length, in.	36
Thermic syphons, number	3
Tubes, number and diameter, in.	22—2¼
Flues, number and diameter, in.	54—5½
Length over tube sheets, ft.	21
Fuel	Soft coal
Stoker	Simplex type B
Grate area, sq. ft.	85.2
Heating surfaces, sq. ft.:	
Firebox and comb. chamber	324.7
Syphons	124.0
Firebox, total	448.7
Tubes and flues	4,359.5
Evaporative total	4,808.2
Superheating	1,389.0
Combined evap. and superheat.	6,197.2
Tender:	
Style	Rectangular
Water capacity, U. S. Gal.	12,000
Fuel capacity, tons	14
Trucks	Four-wheel

welding. Stiffening angles on the inside of the box, instead of having the leg of the angle in contact with the side plates, were generally reversed, the toe of the angle being welded to the side plates, as this arrangement gives approximately twice the section modulus for the same material.

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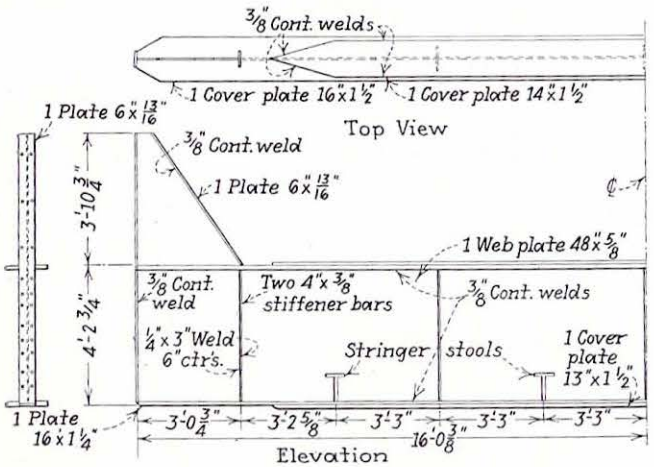
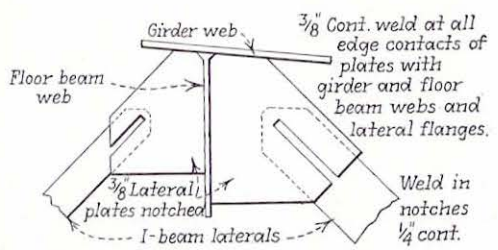
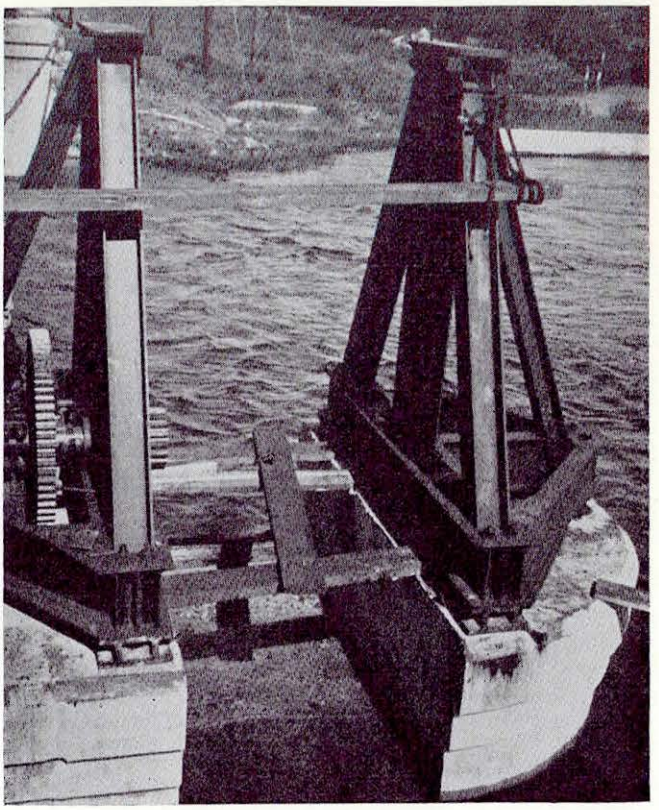


Half Elevation of a Floor Beam


Girder web
3/8" Cont. weld at all edge contacts of plates with girder and floor beam webs and lateral flanges.
Floor beam web
3/8" Lateral plates notched
Weld in notches ¼" cont.
I-beam laterals

Detail of Connection of Girder and Floorbeam to Tops of Laterals



Trunnion Tower in Position

Shop Assembly

The main girders, floor beams, stringers, stringer bracing, trunnion supports and bottom counterweight boxes were assembled in the shop and the field holes reamed. The bottom counterweight was set in position and the two trunnions lined up, being checked accurately with a piano wire running through the trunnions. The box was then tacked to the main girders and this connection shop welded. A continual check was made to insure that the welding did not pull the trunnions out of line. The driving racks were bolted permanently to the rack supports and these were then set in approximate position with adjusting screws engaging lugs which were tack-welded to the side of the box. The pitch and the face of the teeth were then adjusted and the rack support shop welded to the box. The bottom counterweight box and the main girders were shipped shop-welded together with the racks and trunnions. The exact distance from the center of the span to the near face of the trunnions was checked, the same dimension being used to set the span in the field.

Erection in Closed Position

As the temporary deck channel span under the northbound track would have interfered with the setting of the floor beams of the new bascule span in a horizontal position, it was necessary to remove the temporary span, set the new span, install the new deck and place the rails in as short a time as possible. To do this, the trunnion towers were set in their permanent position and bolted to the foundation, the main girders being erected in the down position. During this time, two panels of the floor system, each including one floor beam, one panel of stringers and the bottom lateral bracing, were preassembled and partially welded in the field. When the changeover was made, the temporary span was removed,

the floor system was set in position and field bolted. Traffic was to be resumed on only the southbound track until some repair work could be done on the heel pier, the concrete having been cut out to accommodate the temporary girder under the northbound track.

Originally, there were about 10 field bolts in each connection of the floor beams to the main girders. Sufficient additional holes had been put in the southbound side to carry trains at slow speed, so that traffic could be resumed before these connections were welded. The floor beams were provided with heavy erection seats to support the stringers. Supplemented with six field bolts in the stringer connections, these seats were ample to care for traffic temporarily before these connections were welded. The heel-end floor beam transferred its live load reaction directly to pedestals on the foundation.

After bolting up the connections with Dardalet bolts and field welding some of the bracing, the deck was installed and traffic resumed. For appearance, most of the rivet bolts were burned off flush, chipped and welded. The span fit perfectly in the field, the accuracy of the fit being indicated by the fact that the connection holes in the end floor beams, which were shop drilled for the end rails, checked to the rail gage to within $\frac{1}{32}$ in. when erected. The time required to make the changeover, including the erection of a new approach span, was approximately 6½ hr. instead of 8 hr., as had been expected. Only one train was delayed.

A Comparison

The weight of the structural steel in the welded span is 208,000 lb., while the old riveted span of the same design loading weighed 293,000 lb., a saving of 85,000 lb. The counterweights were reduced 200,000 lb. A comparison of the weights of the riveted and welded structures is somewhat misleading, however, since by altering some of the riveted details, a reduction in the weight of the riveted span could have been affected without any reduction in strength. This saving would have been partially offset, however, by the cost of revising the riveted details. A comparison of the holes and rivets, or bolts, in the former riveted span and the new welded span may be of interest. Exclusive of the holes provided for permanently bolting bearings, gears, etc., which were common to both jobs, there were approximately 19,000 rivets and 51,000 holes in the riveted span. The welded span contains a total of 354 field bolts and a total of 844 holes in the entire structural steel.

This all welded movable span, which has been carrying main-line high-speed traffic for about nine months, is the only all-welded railway bridge of its type in existence, although there are several all-welded fixed bridges in main line service in Europe. There are two other all-welded railway spans in this country, but that these are under industrial tracks where movements are infrequent and at slow speeds. It is believed that the investigation and progressive application of welding on the Florida East Coast has been on a sound basis and that the results obtained have fully justified the decision to use welded fabrication in the structures to which it has been applied on this line. Shielded electrodes have been used in all excepting the first described job. A large number of tests have demonstrated that, with a proper shielded electrode, proper equipment and proper procedure, a deposit of weld metal, of which the requisite properties are at least equal to the open hearth structural steel generally used, can be obtained consistently in shop and field work as well as in test pieces.

All of the foregoing work has been carried out under the general direction of L. C. Frohman, chief engineer; the writer has performed the work in connection with design, detailing and shop and field inspection.

Charges for Refrigeration Services Prescribed

WASHINGTON, D. C.

AFTER a protracted investigation of the cost of performing various refrigeration services instituted by an order issued in 1928 and amended in 1931 the Interstate Commerce Commission has issued a comprehensive report of its studies of the various cost items accompanied by an order effective on September 10 prescribing scales of charges to be observed after that date. The prescribed charges will effect both increases and reductions in various items as compared with those now in effect.

After setting forth the cost of the several elements entering into the furnishing of refrigeration service throughout the country the commission has prescribed a scale of reasonable charges for the future for standard refrigeration service on apples, citrus fruits, deciduous fruits, melons, and vegetables from Arizona and California origins to destinations in the Denver, Colo., group and groups east thereof in addition to indicating the basis for such charges to other destination territory. Similarly reasonable charges are prescribed for refrigeration service under rules 240, 242, 245, and 249, of the perishable protective tariff, where applicable, and unit costs are indicated to be applied at other destinations.

The order requires that charges for service under section 4 of the tariff be the full cost of furnishing that service and the report finds that carriers have the right to restrict the initial icing of cars by shippers but not the right to prohibit shippers from precooling shipments in cars while lacking adequate facilities for performing that service themselves.

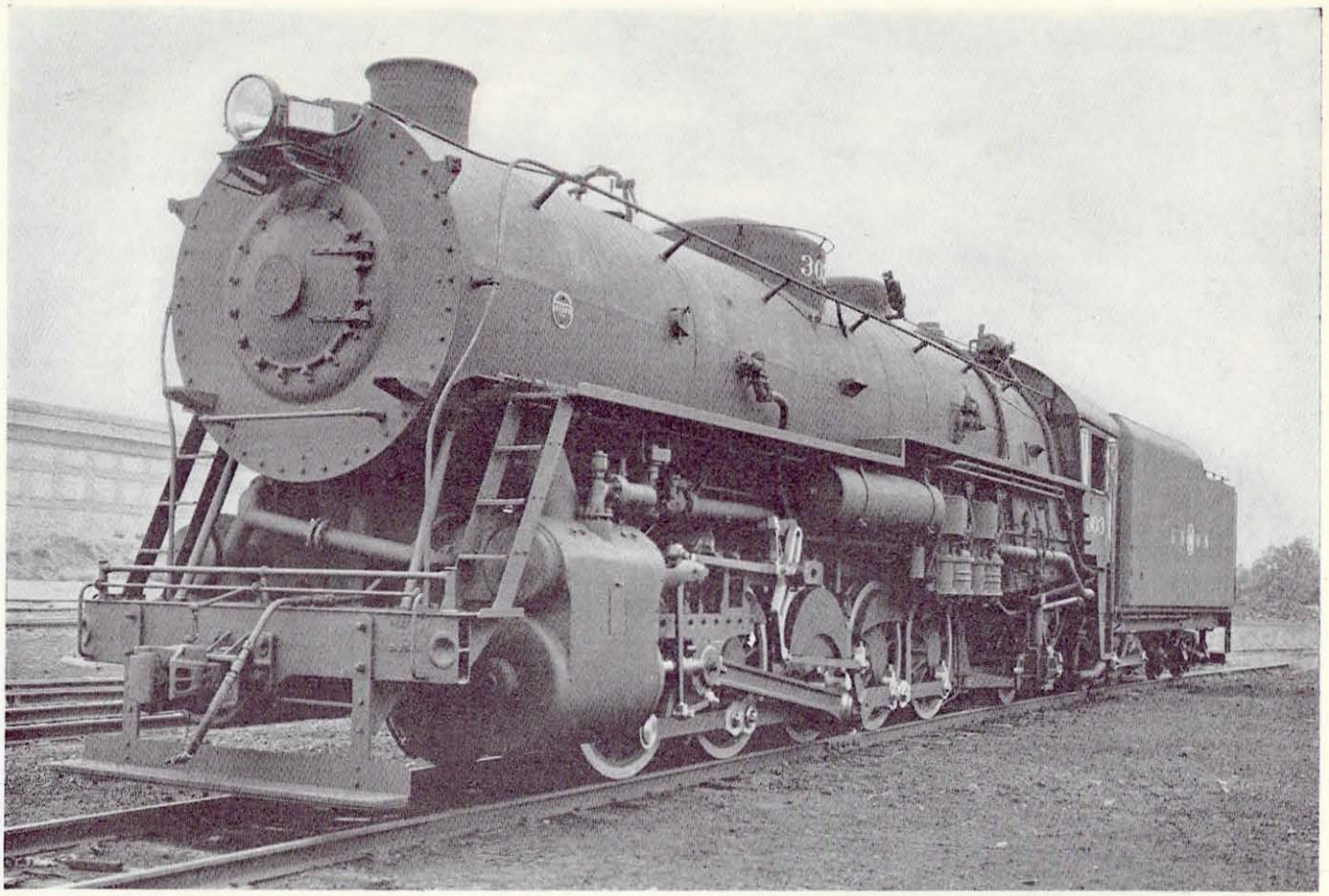
The proceeding was originally instituted at the request of certain shippers for an investigation such as was then being conducted as to charges from points in the South and was subsequently broadened at the request of the carriers. It has been predicated on the theory that the charges for refrigeration service should cover all the costs occasioned by that service, but no more, leaving the transportation expense, that would be incurred whether or not refrigeration service be furnished, to be provided for by the line-haul rates.

The purpose throughout the report has been to show the additional cost entailed by the refrigeration service and to fix charges that will fairly cover such costs plus a reasonable profit. The commission accountants began their examinations in 1928 and concluded them early in 1932, and hearings were held at various times and places from April, 1932, to October, 1933, being restricted to the receipt of evidence concerning the charges under section 2 from Arizona and California to all destinations and the charges under section 4 on all commodities from all origin points to all destinations.

An ice-cost formula was used in collecting the data in a form prepared by a special committee composed of the chairman of the national perishable-freight committee and certain accounting and operating officers of the railroads and express companies, with the approval of the Railway Accounting Officers' Association. The present value of the facilities for furnishing refrigeration service was found to be $19,231,905 for the purposes of this proceeding, and a net return of 6 per cent was found to be reasonable, but to provide against contingencies and to enable respondents to build up a reserve for emergencies an additional .5 per cent was allowed.

Charges for standard refrigeration service, under sec-

(*Continued on page 109*)



The Union Railroad 0-10-2 Switching Locomotive

Union Railroad Receives Transfer Locomotives from Baldwin

Five engines of unusual wheel arrangement, with tender boosters, each develop over 100,000 lb. tractive force

THE Union Railroad has received five locomotives for general switching and transfer service from the Baldwin Locomotive Works. They are of the 0-10-2 type and, so far as is known, are the first locomotives of this wheel arrangement ever built.

The Union Railroad operates 44.75 miles of line in the Pittsburgh district, which connects with all of the railroads entering Pittsburgh, and serves a large number of stations and sidings. The unusual wheel arrangement is the result of the necessity for sufficient boiler capacity to permit the locomotives to operate at high capacity at transfer speeds, together with turntable restrictions on total wheel base; hence, the trailing truck to carry the overhanging weight of the locomotive firebox and the absence of the front truck which is not necessary for the range of speeds within which the locomotives operate. The builder has designated the locomotives of this wheel arrangement as the Union type.

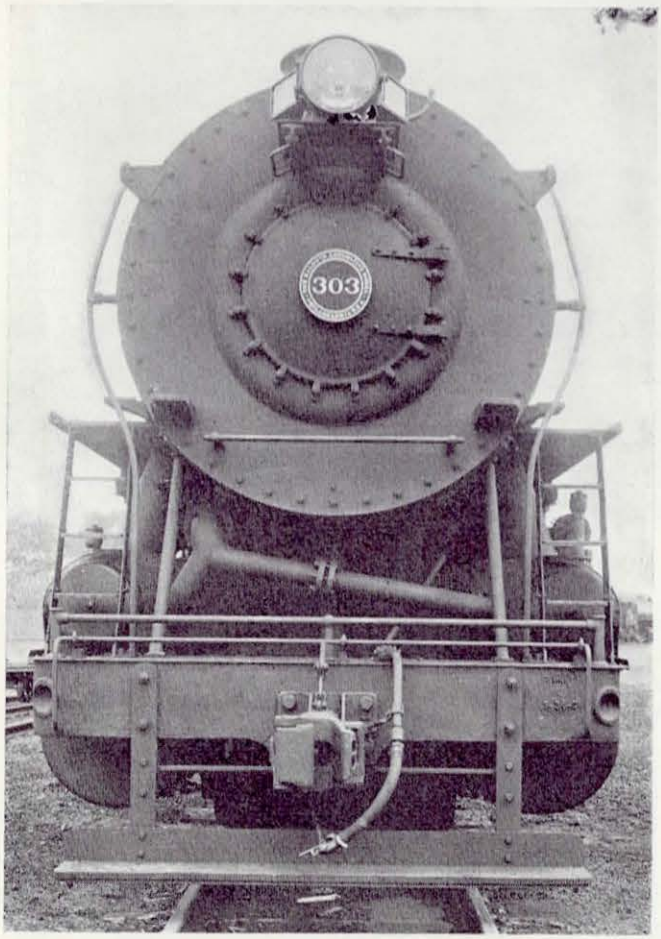
These locomotives have unusually large boilers for use in switching and transfer service. The total evaporating heating surface is 4,808.2 sq. ft., and the type A superheater has 1,389 sq. ft., or a combined heating surface of 6,197.2 sq. ft. The grate area is 85.2 sq. ft. The boiler pressure is 260 lb. per sq. in., the driving-wheel diameter 61 in., and the cylinders 28 in. by 32 in.

The locomotives develop a cylinder tractive force of 90,900 lb. and, with the reversible booster driving on the front tender truck, develop a total tractive force of 108,050 lb. The locomotive is designed to develop a tractive force of 66,000 lb. at 20 m.p.h., and at 35 m.p.h., which is as fast as the locomotive is expected to run in regular service, it will still develop nearly 40,000 lb.

The boiler is conical in shape, the first course having an outside diameter of 88 in., which increases to 98 in. over the third course. The firebox has a depth of 91½ in. at the front and 75½ in. at the back. The combustion chamber extends 36 in. into the barrel of the boiler. The Security sectional arch is supported on three Nichol-

son Thermic Syphons in the firebox. The boiler is fed by one Hancock turbo-injector located underneath the cab board on the right side, which acts as an exhaust-steam feedwater heater. On the left side the boiler is equipped with one Ohio non-lifting injector. The locomotive is fitted with a Simplex type B stoker and Firebar grates. The boiler jacket is of Cor-Ten steel, as are also the cylinder jackets.

The frames are cast steel of the bar type, bolted to the rear cast-steel cradle which also forms the foot plate of the locomotive. The cylinders and half saddles are of close-grain cast iron, which are bolted together and bolted and keyed to the frames. The cylinder heads are



Front End of the Union Railroad Locomotive

of cast steel, designed to conform to the contour of the rolled-steel piston heads.

The main driving wheels have Baldwin disc centers in which provision for adequate counterbalance is made. The main wheels are cross-counterbalanced in accordance with present practice. The front pair of driving wheels is fitted with the Alco lateral motion cushioning device. The spring suspension is arranged in two parts; the three forward pairs of driving wheels are equalized as one unit and the two rear pairs of driving wheels and the trailer truck are equalized together as the other unit. The trailer truck is of the Baldwin-Hodges type.

The crossheads operate in single-bar guides of the Pennsylvania multi-ledge type. Both the back end of the main rod and the main side-rod connection are designed to provide for the application of floating bushings. The remainder of the side-rod ends are designed for pressed bushings.

The valve motion is of the Walschaert type with a total travel of 7¾ in. The valves, which are 12 in. in diameter, operate in bushings of Hunt-Spiller gun iron and have packing rings of the same material. Piston and valve rods are fitted with King type packing. The throttle is the Glaenzer poppet type and the power reverse gear is Alco type K.

Other equipment with which these locomotives are fitted include the Schlacks force-feed lubricator for valves and cylinders, the Detroit three-feed hydrostatic Bullseye lubricator for the air pump, stoker engine and booster engine, the Unit Safety drawbar and radial buffer between engine and tender, and the Loco Valve Pilot. The locomotives are fitted with Westinghouse Schedule 8ET, air brakes with two 8½-in. cross-compound compressors.

The tenders have a short wheel base to suit the limiting turntable conditions, with four-wheel trucks front and back. The tank is built high to provide a capacity of 12,000 gallons of water and 14 tons of coal. It is rectangular in shape and is built of Cor-Ten steel plate, welded throughout. The tender frame is built of 13-in., 45-lb. channels, strongly braced, over which is laid a 2½-in. wood floor.

The tender trucks are fitted with steel-tired wheels, with spoke centers, having an outside diameter of 36 in. Incorporated in the front truck is the Franklin C-2-R-S type reversible booster with 50 per-cent cut-off. The factor of adhesion of the booster, driving through side rods on both axles, with its tractive force of 17,150 lb. and the tender loaded, is 6.35; with a one third load, 4.27, and with the tender light, 3.18.

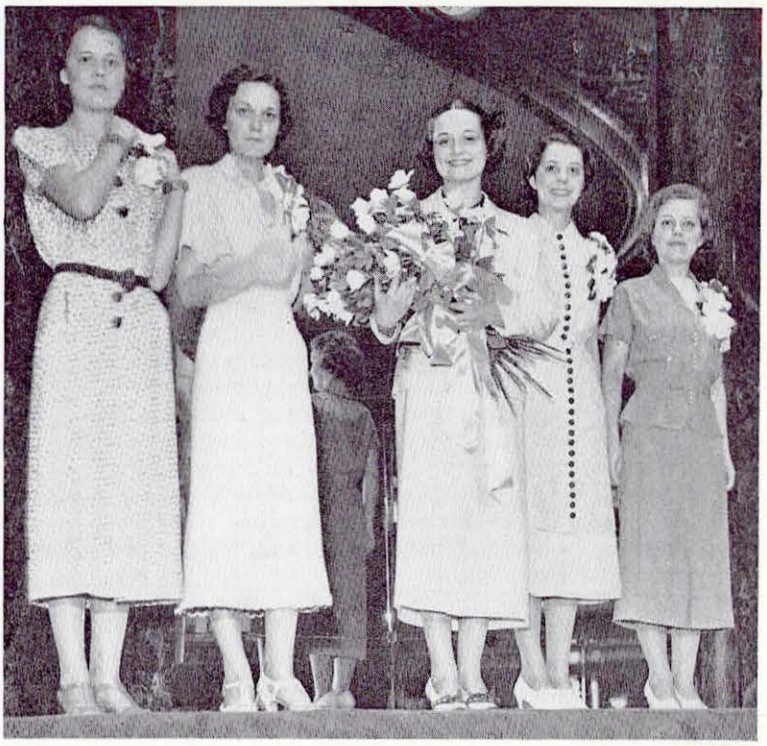
The principal dimensions and proportions are given in the table.

General Dimensions and Weights of the Union Railroad 0-10-2 Type Locomotives

Railroad	Union
Builder	Baldwin Locomotive Works
Type of locomotive	0-10-2
Road numbers	301-305
Date built	June, 1936
Service	Switch. and transfer
Rated tractive force, engine, 85 per cent, lb.	90,900
Rated tractive force with booster, lb.	108,050
Weights in working order, lb.:	
On drivers	343,930
On trailing truck	60,430
Total engine	404,360
Tender	240,000
Wheel bases, ft. and in.:	
Driving	22—0
Rigid	16—6
Engine, total	32—0
Engine and tender, total	67—3½
Driving wheels, diameter outside tires, in.	61
Cylinders, number, diameter and stroke, in.	2—28 x 32
Valve gear, type	Walschaert
Valves, piston type, size, in.	12
Maximum travel, in.	7¾
Boiler:	
Steam pressure, lb.	260
Diameter, first ring, outside, in.	88
Firebox length, in.	120⅛
Firebox width, in.	102¼
Combustion chamber, length, in.	36
Thermic syphons, number	3
Tubes, number and diameter, in.	22—2¼
Flues, number and diameter, in.	54—5½
Length over tube sheets, ft.	21
Fuel	Soft coal
Stoker	Simplex type B
Grate area, sq. ft.	85.2
Heating surfaces, sq. ft.:	
Firebox and comb. chamber	324.7
Syphons	124.0
Firebox, total	448.7
Tubes and flues	4,359.5
Evaporative total	4,808.2
Superheating	1,389.0
Combined evap. and superheat	6,197.2
Tender:	
Style	Rectangular
Water capacity, U. S. Gal.	12,000
Fuel capacity, tons	14
Trucks	Four-wheel

Public Responds to Railroad Week

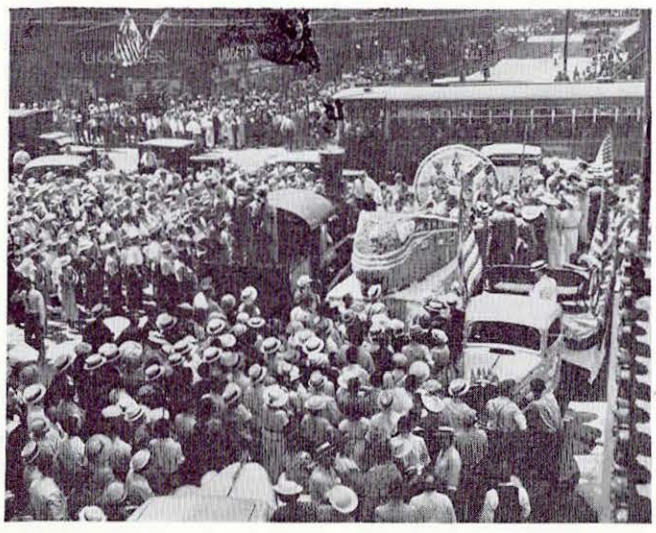
A personality contest, the feature of the program, appealed especially to feminine patronage



The Queen of Queens and Her Court As the Judges Made the Selection

Reading from left to right: Martha Bergersen, Queen of the Milwaukee; Dorothy Whitt, Queen of the North Western; Marybeth McGurk, the "Queen of Queens"; Mildred Williams, Queen of the Pullman Company, and Mildred Kreher, Queen of St. Louis.

WITH a salvo from 18,000 railroad whistles, Western Railroad Week was started on July 13 at 8 a. m. At 10 a. m. at Chicago, Harry G. Taylor, chairman of the Western Association of Railroad Executives, publicly announced the program over the Columbia Broadcasting System from a breakfast-luncheon at the Medinah Club, where more than 1,000 persons witnessed the selection of the "Queen of Queens" and her court by a committee of artists and beauty authorities. In his broadcast, Mr. Taylor said it is appropriate that the Western Railroads pay tribute to the important role played by women in railroad progress. Women passengers have inspired the marvelous progress being made in refinements of service such as air-conditioning and the beauty of decoration in the new trains. Thousands of loyal women workers help to keep our railroads going. The selection of a queen for Railroad Week is an effort to make this tribute tangible, he said.



The Queen of Queens Was Crowned at State and Madison Streets

The introduction this year of a personality contest for women employees of the railroads was designed especially to appeal to femine patronage. Contests were held among employees at various points throughout the West and the winners of these contests were sent to Chicago, where the final judging was held. In addition, each railroad in Chicago was permitted to select one entry. As a result twenty girls were in the final contest. Marybeth McGurk, 18, a stenographer in the passenger department of the Chicago & Eastern Illinois at Chicago, was chosen Queen of Queens, while those selected for her court included: Mildred Williams, 18, a clerk in the accounting department of the Pullman Company at Chicago, Dorothy Whitt, 26, a filing clerk in the car accounting department of the Chicago & North Western at Chicago, Mildred Kreher, 27, a comptometer operator in the freight accounting department of the St. Louis-Southwestern, at St. Louis, Mo., and Martha Bergersen, 24, a clerk in the timekeeping department of the Chicago, Milwaukee, St. Paul & Pacific at Chicago.

At 1 p. m., the queen was crowned at State and Madison streets by Robert Upham, city comptroller, representing the mayor, and in the evening, the queen and her court attended dances held at the Trianon and Aragon ballrooms, where door prizes of trips to western vacation points were awarded holders of winning tickets. During the first three days of Railroad Week the queen and her court were present at all functions in Chicago, departing on July 15 on a trip throughout the Southwest, which included appearances at Railroad Week festivities at St. Louis, Mo., Hot Springs, Ark., and the Texas Centennial Exposition at Dallas, Tex.

At a luncheon of the Advertising Men's Post of the American Legion, in Chicago, Joseph H. Hayes, counsel

for the Western Association of Railway Executives, described the city's dominant position in the railroad world. "The world's greatest railroad center," he said, "has 7,726 miles of steel rails, more than the entire State of Wisconsin. There are 85,500 railroad employees in Chicago who, with their families, make up a larger population than that of Indianapolis. The annual payroll of these employees totals $150,000,000. Since 1932 in excess of $40,000,000 has been spent on air-conditioning, while speed has been increased and rates lowered for both passenger and freight service."

Addresses by Railway Officers

At a luncheon on July 14, John J. Pelley, president of the Association of American Railroads, addressed the Rotary Club of Chicago, explaining how the railroads have demonstrated their ability to carry on under difficulties; to cut the unit cost of producing transportation while continuing to pay the highest transportation wages in the world; to improve their service and methods; in short, to maintain their position as the finest general transportation system in the history of the human race, and to keep that transportation system ready to go forward as America goes forward. Operating efficiency, improvements in methods and equipment, safety and government competition were also discussed by Mr. Pelley.

On the evening of the same day, the Illinois Central gave a dinner for 82 living veterans of this railroad who have each completed at least half a century of service. Commemorative gold cards in pass size were presented by L. A. Downs, president. Part of the program was broadcasted over the radio.

On the same day a Train Criers' contest sponsored by the Junior Association of Commerce was held at Wrigley Field on the baseball diamond prior to the start of the game. The winner was J. A. Berti, an employee of the Chicago, Milwaukee, St. Paul & Pacific at Chicago.

On July 15 the Chicago Association of Commerce held a "Railroad Week" luncheon at which Judge R. V. Fletcher, vice-president and general counsel of the Association of American Railroads was the principal speaker. A direct telegraphic hookup with coincident Chamber of Commerce luncheons in cities throughout the West was operated from the speakers' table, keys being manned by prominent rail executives who at one time were telegraph operators. Mr. Fletcher predicted that in the present cycle there will be few, if any, additional railroad bankruptcies. He described the improvement in recent months in the financial condition of the railroads and in public understanding and appreciation of their progress and achievements. Mr. Fletcher also discussed increased carloadings.

July 16 was Women's Day, the program providing for a dinner and style show at the Medinah Club of Chicago, sponsored by the Railway Business Woman's Club and the Woman's Traffic Club of Chicago. Judge R. V. Fletcher was the principal speaker, while the style show featured models appropriately dressed to travel in modern air-conditioned trains.

On July 17 a handcar derby sponsored by the Junior Traffic Club and held over street car tracks was broadcast over the National Broadcasting Company while on the same day 12 redcaps, each carrying four suitcases weighing a total of 60 lb., vied for honors in a foot race.

Activities of the week were climaxed at 3 p. m. on Saturday, when more than 15,000 railroad employees in Chicago paraded through the loop, with numerous floats depicting the progress of Western railroads, and 25 American Legion drum and bugle corps.

Federal Government Paying Railroad Pensions

WASHINGTON, D. C.

THE federal government, having been enjoined by the district court for the District of Columbia from collecting taxes from railroads to pay pensions to retired railroad employees, has decided to pay from its own funds the retirement annuities provided for in the railroad retirement act to those who are eligible and are willing to retire and take chances that the payments will be continued after the act has been passed upon by the Supreme Court.

The first 18 checks for such payments were placed in the mails on July 13 by the Treasury Department, on certification of the Railroad Retirement Board, under an appropriation of $46,685,000 made by Congress for the purpose for the fiscal year 1937. This followed several conferences between members of the board and President Roosevelt and officials of the Treasury and Justice departments as to the policy to be pursued by the government in the light of the court's decision on June 26, which held the tax act unconstitutional but failed to make such a finding as to the retirement act itself, although Justice Bailey said that the pension system so created was substantially the same as that of the act of 1934 which was declared invalid by the Supreme Court.

When Congress passed the two acts it was not contemplated that the retirement annuities should be paid at government expense but the plan was enacted in two parts in an effort to get around the Supreme Court's decision and Congress made an appropriation for the payments in the independent offices bill, expecting that the money would be provided by the special tax on railroads and their employees. It also appropriated $1,000,000 for the administrative expenses of the board, in addition to an unexpended balance from the year ended June 30. When the tax act was held invalid, so far as the tax to be paid by the railroads is concerned, the government was left with a law authorizing the payment of pensions which contained no reference to the method by which the money was to be put into the Treasury and some 24,000 applications from railroad employees for the annuities.

As a result the peculiar situation exists, while the government is planning an appeal from Justice Bailey's decision, under which a government system of old-age retirement annuities is beginning to function for the employees of one industry which is different from and on a more liberal basis than that proposed for employees generally under the social security act. The railroad retirement act includes an exemption from the provisions of the social security act.

Under the retirement act annuities are payable as a matter of right and without relation to the financial condition of the recipient to railroad employees who on reaching the age of 65 retire from employment, or who retire after having been employed for 30 years or more in railroad service and having attained the age of 50, or who have been retired for incapacity after 30 years of service. However, those eligible for such annuities are faced with the possible prospect that the retirement act also will be declared unconstitutional when it reaches the highest court, in which event they might be left without either a pension or a job, although Murray W. Latimer, chairman of the Railroad Retirement Board, predicted that in that event an effort probably would be made to write a new law, and spoke of the possibility of arrangements with the railroads for reinstatement. It is

believed that many employees will continue to rely upon the voluntary pension plans of the railroads which generally provide for retirement at 70.

The uncertain status of the legislation is regarded as one reason why the number of applicants for pensions has been considerably less than was anticipated. The board, in making its estimate of the appropriation needed for administrative purposes, had contemplated the processing of 45,000 eligible applications for annuities prior to July 1 but the announcement of the first payments referred to only 24,000. It has also been thought, however, that in view of prevailing economic conditions many employees eligible to retire preferred to retain their jobs, although the legislation was drafted in an effort to induce the retirement of as many of the older men as possible to make way for jobs or promotions for younger men. In accordance with this purpose an employee failing to retire at 65 is penalized by a reduction in his pension for each year he remains in service (except by special agreement for the period from age 65 to age 70).

Railroad employees who retire immediately under the retirement act will receive pensions without having made any considerable contribution toward them, while under the social security act the retirement annuities which begin to accrue next year will be based on the number of years during which contributions have been made. However, as the court did not enjoin the collection of taxes from railroad employees the railroads will continue to deduct 3½ per cent of their compensation to be placed in special funds pending the outcome of the litigation. The announcement made by the Railroad Retirement Board bore the caption "Social Insurance Becomes Reality With Mailing Of Checks Today", and included the following:

For the first time in America, a governmental system of old-age retirement annuities (for other than governmental employees) begins to function today—July 13th—in the payment of annuities, when the United States Treasury, on certification of the Railroad Retirement Board, places the first checks for 18 recipients of such annuities in the mails.

These checks to retired railroad workers represent, according to Murray W. Latimer, Chairman of the Railroad Retirement Board, the first of a series of monthly payments to which under the Railroad Retirement Act the recipients will be entitled as long as they live. Some 4,000 railroad workers are immediately eligible for such annuities; more than 20,000 other railroad workers have made application for these annuities. The Railroad Retirement Board is proceeding at top speed to secure the data necessary to certify to the United States Treasury annuity payments for all railroad workers who are eligible.

Of the first 18 annuities certified to the Treasury by the Railroad Retirement Board, Mr. Latimer said, the largest was $91.04 per month and the smallest was $13.55—the others ranging from $40.00 to $70.00 per month. The largest, $91.04, goes to Thomas Biddle Strain, Johnson City, Tennessee. Mr. Strain, who recently celebrated his 73rd birthday, has worked on the railroads of America for 54 years. He was retired from employment on the East Tennessee & Western North Carolina on May 31 of this year. One of the 18 was Mrs. Cora Miranda Jones, who retired in April of this year from her position as station agent of the Wichita Northwestern at Iuka, Kansas.

The payments which are being made today have great historical significance not only to railroad workers but to workers of all sorts in America, declared Mr. Latimer who, in addition to serving as chairman of the Railroad Retirement Board, is director of the Social Security Board's Bureau of Federal Old-Age Benefits, "because they forecast what is in store for 26,000,000 to 30,000,000 American working men and women for whom somewhat similar annuities begin to accrue on January 1, 1937, under the Social Security Act.

The annuities paid today are based primarily on past service and wages. The one and one-quarter million railroad workers now in service also have rights to receive annuities upon qualifying and by continued service most of them are adding to the amounts which they will receive upon retirement.

Charges for Refrigeration Service Prescribed

(*Continued from page 104*)

tion 2 of the tariff, from points in Arizona and California to destinations in rate groups described in the tariff, as prescribed by the commission are shown in the following table in comparison with the regular tariff charges and the present temporary charges which have been in effect since May 16, 1933:

Representative points in tariff group		Apples*	Citrus fruits*	Deciduous fruits*	Melons*	Vegetables*
Denver, Colo.	1	$65.00	$65.00	$75.00	$80.00	$60.00
Do.†	2	58.50	58.50	67.50	72.00	54.00
Do.	3	62.50	60.00	65.00	80.00	52.00
Wichita, Kans.	1	70.00	70.00	80.00	85.00	65.00
Do.†	2	63.00	63.00	72.00	76.50	58.50
Do.	3	70.00	65.00	70.00	85.00	55.00
Kansas City, Mo.	1	75.00	75.00	85.00	90.00	70.00
Do.†	2	67.50	67.50	76.50	81.00	63.00
Do.	3	75.00	70.00	72.50	87.50	60.00
Chicago, Ill., and St. Louis, Mo.	1	80.00	80.00	90.00	95.00	75.00
Do.†	2	72.00	72.00	81.00	85.50	67.50
Do.	3	77.00	77.00	79.00	90.00	67.00
Indianapolis, Ind., and New Orleans, La.	1	85.00	85.00	95.00	100.00	80.00
Do.†	2	76.50	76.50	85.50	90.00	72.00
Do.	3	85.00	80.00	82.50	90.00	67.00
Cincinnati, O.; Detroit, Mich., and Pittsburgh, Pa.	1	90.00	90.00	100.00	105.00	85.00
Do.†	2	‡81.00	‡81.00	‡90.00	‡94.50	‡76.50
Do.	3	90.00	86.50	85.00	95.00	70.00
New York, N. Y., Philadelphia, Pa., and Atlanta, Ga.	1	95.00	95.00	105.00	110.00	90.00
Do.†	2	§85.50	§85.50	§94.50	§99.00	§81.00
Do.	3	95.00	95.00	95.00	105.00	80.00
Boston, Mass.	1	100.00	100.00	110.00	115.00	95.00
Do.†	2	¶90.00	¶90.00	¶99.00	¶103.50	¶85.50
Do.	3	100.00	100.00	97.50	109.00	85.00

* Amounts shown represent (1) regular tariff charges, (2) present temporary charges, and (3) maximum charges for the future.

† At the request of shippers the charges for standard refrigeration service were temporarily reduced 10 per cent effective May 16, 1933. The reduced rates were accompanied by a note indicating their expiration on May 31, 1934. This date has been extended from time to time and is now April 30, 1937. Both the former and the reduced rates are carried in the tariff.

‡ Not applicable to stations in Alabama on the Atlanta, Birmingham & Coast Railroad, Atlantic Coast Line Railroad, Seaboard Air Line Railway, nor Western Railway of Alabama, nor to Florida Group 1 stations.

§ Not applicable to Florida Group 2, nor Georgia stations.

¶ Not applicable to Florida Group 3, nor North Carolina or South Carolina stations.

Charges for modified refrigeration service under sections 240, 242, 245, 247, and 249 were set forth in another table and charges for ice placed in bunkers of refrigerator cars at icing stations in groups numbered 1 to 11 were set forth in another table, ranging from $3.05 to $6.35 a ton. As to charges under section 4 of the tariff the order provides as follows:

For ice placed in the bunkers of refrigerator cars at icing stations in groups numbered 1 to 11, inclusive, as shown in Table 1 in the said report, charges as shown in said table, provided that, when considered necessary for competitive reasons, respondents may publish for application at any group-border station the charge as indicated in said table for the group adjoining the group in which such station is situated.

For switching refrigerator cars to and from ice docks, 45 cents per icing at stations on the lines of the Santa Fe, Southern Pacific, Union Pacific and Western Pacific systems in Arizona, California, Nevada and Oregon, and 80 cents per icing at all other stations except stations in the territory east of the Mississippi River and south of the Ohio and Potomac Rivers.

For supervision, 82 cents per icing in the territory west of the Mississippi River, 97 cents per icing in the territory east of the Mississippi River and north of the Ohio River and the southern boundaries of Virginia and West Virginia, and 69 cents per icing in the territory east of the Mississippi River and south of the Ohio River and the southern boundaries of Virginia and West Virginia.

For station and auditors' accounting, 35 cents per car per trip.

For bunker repairs, $5 per car per trip, provided that no such charge shall be made on shipments moving in cars owned or leased by the shipper, the costs of repairs to which cars are not borne by the carriers.

For ice haulage, 0.75 mill per ton-mile.

Railroad Supply Departments Hold Annual Meeting

Talk scrap costs and simplification of materials—Urge observance of specifications—Continue stores expense

THE Purchases and Stores division of the Operations and Maintenance Department, Association of American Railroads, held a two-day meeting in the Palmer House, Chicago, July 9 and 10, to receive reports from 14 active committees and to select new officers. The meeting was presided over by C. B. Tobey, general storekeeper, Lehigh Valley, chairman, assisted by W. J. Farrell, secretary, and was attended by approximately 300 members and guests, including representatives of railway supply industries. Addresses were limited to remarks by the chairman and informal talks by J. M. Symes, vice-president, Operations and Maintenance Department, A.A.R., and S. G. Down, president, Railway Supply Manufacturers' Association, while other special features on the program were confined to a paper on the development and activities of sectional meetings of purchases and stores officers and the presentation of the winning papers in an essay contest sponsored by the Division.

Interest in the routine work of the Division centered around reports on scrap handling and reclamation, on forest products, on pricing materials, and on simplification. Only brief reference was made to conferences held during the year in connection with reports proposed or prepared by the Federal Co-ordinator relating to railway supply problems or operations, including the subject of stores expense which will be continued.

E. A. Clifford, general purchasing agent, C. & N. W., was elected chairman and A. L. Sorensen, manager of stores, Erie, was elected vice-chairman for the next year, while elections to the general committee for a term of two years included A. C. Mann, vice-president, I. C.; C. C. Warne, purchasing agent, N. Y. C.; E. G. Walker, assistant general purchasing agent, A. T. & S. F.; J. L. Bennett, purchasing agent, Central of Georgia; O. A. Donagan, general storekeeper, B. & M.; and L. P. Krampf, supply agent, M. P. E. S. Jamieson, assistant general purchasing agent, U. P., was selected to fill the unexpired term of W. G. Black, deceased, and E. D. Toye, general storekeeper, C. N. Lines East, to fill the unexpired term of A. L. Sorensen.

Remarks of J. M. Symes

In a brief talk on the occasion of his first appearance before the Division, J. M. Symes, expressed the pleasure of the railroads in the heavy reductions which have been made in inventories, and otherwise complimented the Division for contributing over the years to enlarging the efficiency and economy of the supply service and for policing the use of materials. Responding to requests for comments on the status of the Division in the A.A.R., he explained that while the railroads continue to be in competition with each other, they are mutually interested in many important problems of maintenance and operation and that it is their intention to rely to an increasing degree on the Division to meet problems of common interest by collective action along practical lines. He added further that the Division will be expected to select studies which will be most beneficial to the railroads as a whole. He reminded his audience that all the resolutions formulated by committees are useless if not adopted and followed.

Propose Appliance Exhibit

Prospects for the re-establishment of a national appliance show were described by S. G. Down, vice-president, Westinghouse Air Brake Company, and president of the Railway Supply Manufacturers' Association, who announced the active promotion of plans to hold a transportation exposition at Atlantic City in 1937. He called attention to the radical changes in mechanical appliances for railway use and the introduction of many new products of importance to the railroads, and pointed out that the improved earnings of the railroads and the increases made in their purchasing have revived a demand for a centralized exhibit that will afford railroads the opportunity to see first-hand, with the least inconvenience, all the products which have been developed to promote their efficiency and economy. He urged the Division to join in furthering such an exposition by arranging to hold its next meeting at Atlantic City simultaneously with the annual meeting of the mechanical and allied sections of the A.A.R. At the present time, Mr. Down added, the demands on manufacturers for deliveries are heavier than they have been in years, with the numerous installations of new power and equipment that the railroads are making, and he urged the railroads to adjust their ordering so far as possible to reduce the demand for immediate shipments.

High Lights

In his review of the problems and work of the Division, Chairman Tobey stated that conditions are vastly different today than they were at the turn of the century when very few stock books and records and no material classifications were in use in railroad storehouses. It was a common practice, he explained, to decide on the quantities to be ordered by walking around the storeroom once a week or so and looking into each bin. To forecast material requirements in that manner today, he said, would be impossible.

A committee on scrap handling reported the cost of preparing similar classes of scrap iron and steel on six railroads, with the conclusion that the figures showed the impracticability of comparing costs. Proposals to change the classifications under which boiler tubes are sold, by differentiating between rattled and unrattled tubes, in the interests of more flexibility, were met with objections, but were adopted. The report was revised to eliminate recommendations that scrap be sold on an f.o.b. line and net ton basis, the committee realizing that the interest of the railroads in making the best bargains, not overlooking freight revenue, has transcended the desire for uniform bases of comparison on many roads, and agreeing that the general adoption of a net ton base must await the pending revision of many freight rate

schedules in the east which are still on a gross ton basis.

A committee working jointly with the Mechanical and Engineering divisions on reclamation reported progress in preparing the text for a manual of approved reclamation practices, submitted insertions on welding rail ends, reforming joint bars and welding frogs, and supported the Mechanical division in condemning the use of improperly renovated journal packing and waste for cars in interchange.

A committee assigned to promote uniformity in statistical reports and stores expenses reported success in getting the Federal Co-ordinator to abandon in part a plan to make a comprehensive investigation of these subjects at the expense of the railroads, but otherwise took no steps pending the action of the A.A.R. on previous proposals to have a special committee assigned to handle the subject.

The report of a new committee outlining the problems and requirements in forecasting materials met with opposition. U. K. Hall (U. P.) objected to statements inferring that under-ordering was preferred to over-ordering, stating that control of investment in materials is important, but that a policy favoring under-ordering of much of the materials in demand at present might prove very expensive. The view was also expressed by W. S. Morehead (I. C.) and endorsed by others that the stockkeeper, rather than stock records, should be regarded as the real backbone of effective ordering. However, a suggestion from J. J. Kukis (Erie) that representatatives of using departments be consulted in developing approved plans for forecasting materials was also opposed, F. D. Reed (C. R. I. & P.) branding such efforts as a waste of time, and C. D. Baldwin (Bang. & Aroos.) expressing the fear that it might compromise the supply department's authority over all ordering.

A report on pricing methods, while favoring universal substitution of the system of pricing requisitions from prices posted on bins or material for the system of pricing in offices, caused the most spirited and most extended discussion of the meeting when proponents of the so-called direct pricing method expressed impatience with railroads that refused to give up the old system, and when doubters of the new system questioned some of the claims made by its advocates and inquired more fully into detailed procedure. When F. D. Reed (C. R. I. & P.) stated that centralized accounting was being adopted more rapidly than direct pricing, W. S. Morehead (I. C.) contended that the two systems do not conflict with each other and that the Illinois Central has both centralized accounting and direct pricing. G. A. Goerner (C. B. & Q.) said the Burlington once tried direct pricing and abandoned it, but is again considering the subject.

H. H. Laughton (Sou.) said his road had gone to direct pricing and would not go back. U. K. Hall (U. P.) said that his earlier doubts have been dispelled by recent experiences with the practice and stated, in reply to questions from G. E. Scott (M-K-T), that inventory adjustments were reduced by direct pricing but was not prepared to say that they would be eliminated. A. S. McKelligon (S. P.) said that price clerks had been eliminated on the Southern Pacific by direct pricing, and explained that while prices are posted on the materials by the stockmen direct from copies of purchase orders furnished them, the correct price, including freight, is assured by the employment of a rate clerk in each district store. Instead of using actual prices, as on the Southern Pacific, L. C. Thomson explained that the last price is used on the Canadian National and is furnished to stockmen by invoice clerks.

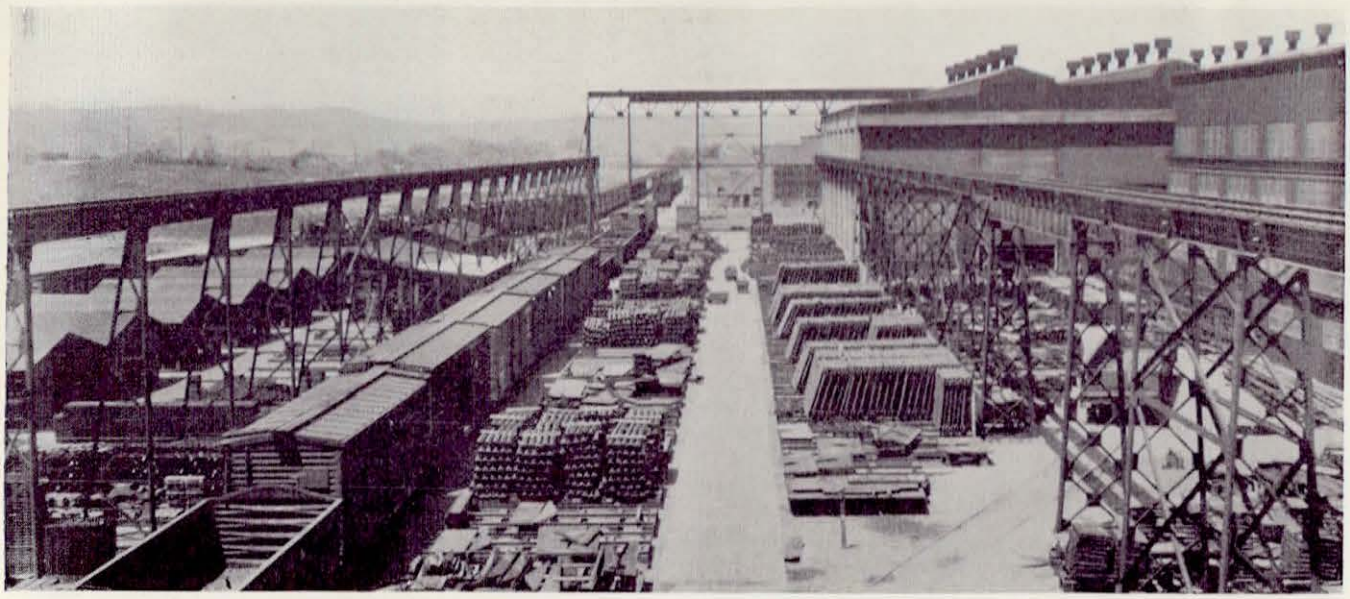
A committee on forest products renewed its pressure

C. B. Tobey, Chairman

E. A. Clifford, Chairman-elect

Moffett

W. J. Farrell, Secretary



Materials Ready for Car Work on the Chesapeake & Ohio at Russell, Ky.

to obtain revisions in specifications for grain doors used in interchange, and committed the Division to support the A.R.E.A.'s efforts to get the railroads to adhere more uniformly to the standard specifications, but the regional committee of purchasing agents in the southwestern region registered, through E. H. Polk (S. P.), objection to the Division's endorsement of any policy permitting the joint inspection of ties purchased by individual railroads, and G. E. Scott (M-K-T) and U. K. Hall (U. P.) restated objections of western roads to the use of the A.A.R. specifications for car lumber, explaining that they lower the grade of lumber desired, and stressed the importance of a joint conference of the Mechanical division, the West Coast Lumbermen's Association and other interested parties to develop agreement on a satisfactory specification.

It was announced by the committee on simplification and standardization that its previous recommendations covering tinware have proved acceptable to the Mechanical division. The committee disclosed that the majority of the many wheel sections sold to railroads during the last five years were manufactured for a single road and that another railroad, by simplification studies, has reduced the number of sizes of steel sheet carried in stock from 531 to 102. Committee reports on purchasing records, on buying patented devices, on material guarantees and on stores facilities were adopted without discussion. The reports and papers are presented in part, as follows:

Report of General Committee

Amendments to the Rules of Order submitted for final adoption provided that nominations for subject committee and special committee members, and for subjects, shall be made by the general committee. Upon notification of such selection, the general committee will forward the names of the committees and personnel to the vice-president, Operations and Maintenance department, A. A. R. Subject committee members thus selected will become contact or key men for that subject within their purchasing or stores groups. The general committee shall make appointments to any committee on which it may be necessary to fill vacancies. Recommendations approved at the annual meeting shall be submitted to letter ballot vote. If adopted, the vice-president, Operations and Maintenance department, will be notified and upon his approval, the secretary of the Purchases and Stores division will advise all members of final approval by the A. A. R.

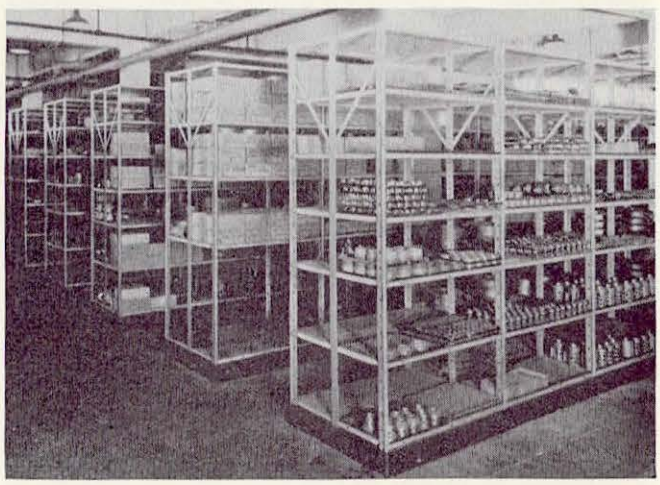
The votes of a majority of the members present shall be required to decide any question, motion or resolution before the session, unless otherwise ordered. Matters requiring authoritative action after approval by the session shall be submitted to the vice-president, Operations and Maintenannce department, through the secretary. Votes on letter ballots on all matters affecting the interests of the railroads represented shall be determined on the basis of membership in the A. A. R. Any recommendations securing two-thirds of the votes cast shall be adopted by the Division.

Activities with Federal Co-ordinator

On October 11, 1935, the Federal Co-ordinator of Transportation proposed an inquiry of material stocks and purchases and stores expenses. As a result of investigations by representatives of the Purchases and Stores and the Accounting divisions, information was obtained from the railroads indicating that the cost to Class I railways of preparing the data requested by the Federal Co-ordinator would amount to approximately $540,000. The committee met with the Co-ordinator's representatives and the Federal Co-ordinator withdrew the request.

Subsequent meetings resulted in the issuance of the Federal Co-ordinator's letter of February 26, 1936, to the executives of the Class I railroads, requesting information regarding the classification of material stocks and the pricing of secondhand material. Later, the Federal Co-ordinator presented the second section of the proposed inquiry on material store expenses, but it was decided to defer this inquiry until after the replies to the Co-ordinator's letter of February 26 were received. These replies were recently reviewed by the committee and referred back to the Federal Co-ordinator for further consideration.

The Federal Co-ordinator's report on handling stores material was referred to the Purchases and Stores division by the vice-president of the A. A. R., and a special committee recommended



Steel Shelving on the Illinois Central at Paducah, Ky.

that it be considered as informative only. This special committee is making further investigations of the suggestions in the report.

A detailed report on the handling, preparation and sale of scrap by the Federal Co-ordinator was referred to the Division by the vice-president of the A. A. R., and was studied. The accounting features of the report were submitted by the Accounting department. Further consideration will be given the report.

The Federal Co-ordinator's report on technical improvements in railroad equipment, roadway and structures was also analyzed by a committee and recommendations relating to patented materials and devices, locomotive coal, and ties were submitted to the vice-president, A. A. R.

The Federal Co-ordinator recently submitted a report to the A. A. R. covering a preliminary study of dining car and restaurant materials and supplies. This report is now under consideration by a joint committee of representatives of the Dining Car and Accounting departments and the Division.

Commodity Price Index

The importance of maintaining a price index for basic commodities was emphasized during the past year through a request from the Bureau of Railway Economics for prompt information regarding costs of representative materials of general use; a special committee was appointed to meet with the director of the bureau, and a tentative list of representative commodities was prepared from information obtained from representative railroads. This list will be further studied by the regional purchasing group committees and the bureau, and a permanent list of items recommended to be maintained on a current or semi-annual basis by the carriers.

Joint Committees

The general reclamation committee, established in 1934 for the purpose of effecting co-ordinated effort, contemplates recommending a manual of standard reclamation practices. The committee is composed of representatives of the Purchases and Stores, Mechanical and Engineering divisions. A joint committee on inspection of materials, composed of representatives of the Mechanical, Engineering and Purchases and Stores divisions is continuing investigations and study. A joint committee on locomotive fuel, composed of representatives of the Mechanical and Purchases and Stores divisions, is also continuing its studies.

The general committee elected to life membership H. S. Burr and J. G. Stuart, past-chairmen of the Division and former members of its general committee.

Report on Handling Scrap

It is difficult to make any comparisons of the cost of dismantling equipment because of differences in conditions when other departments do part of the dismantling and move the equipment to the scrap plants for further preparation. The majority of the railroads are dismantling their own equipment and, conditions permitting, they will continue to do so in the future. Exhibit A shows the cost of preparing the major items of yard scrap. The costs vary considerably, indicating that one railroad's costs alone cannot be taken as an example of other roads' costs.

A study of scrap sales showed that frogs and switches, as well as side frames and bolsters, are sometimes sold at prices identical with heavy melting steel, while in other cases, a very small differential in price prevails. A study of sales made during the year proves that some railroads will always find it more economical to sell certain items of scrap unprepared on account of existing differentials between unprepared and prepared items.

A study of sales, when made by the month, indicates that existing differentials in the price of scrap should be considered in identical months and continually watched. Some roads furnish the purchasing department with statements of costs for preparing scrap which are used when considering awards. These should be checked by determining new costs from time to time so that changing conditions will always be considered.

Further Economies

The most economical methods of preparing scrap and dismantling equipment require cutting torches and alligator sheers. At the present time, the fastest and most economical gases are oxygen and acetylene. The money spent each year for gas represents approximately 60 per cent of the total material charge for the railroads represented on the committee, or $80,000 annually. The committee attempted to study the various sizes of tips and equipment used by their railroads and found, in general, that tips, while different in design, were quite similar in the sizes of the preheating and cutting orifices. Most railroads use tips with smaller orifices for light cutting, and there are possibilities of extending the use of this tip for dismantling purposes. The smaller the preheat orifice, the less is the gas consumption; the same holds true with the oxygen orifice. However, the smaller orifices are more easily plugged. In considering the subject from all angles, the gas and oxygen saved should be compared to the productive labor lost in cleaning tips.

By experimenting with various tips, one railroad has found that the best results can be obtained by using a tip with preheat orifices having 0.66 drill size and cutting orifices of 0.54 drill size. A few sizes of tips and drill sizes, and the relative consumption of oxygen and acetylene by a torch operating one continuous hour are tabulated.

Drill Sizes: Cutting Orifice	Drill Sizes: Preheat Orifice	Cu. Ft. of Oxy. per Continuous Hour	Cu. Ft. of Acety. per Continuous Hour
56	56	121	34
53	56	176	34
51	56	234	34
56	68	96	14
54	66	130	15
52	65	170	17
56	60	105	21
54	58	140	23
52	57	182	27

To obtain the most economical dismantling and cutting of scrap, good serviceable equipment should always be available. Proper pressures should be maintained on regulators and control from generator and manifold. Car frames or scrap should be placed in the most convenient position for torch operators. A laborer should precede the torch operator to remove excessive rust, ashes and tangled scrap. The ultimate handling should be considered before deciding to shear or torch. One man should fit the tips in torches and make miscellaneous repairs. A periodical inspection should be made of the equipment for leaks. Generated acetylene and piped oxygen should be used in place of bottled gases. Safety rules in handling torching equipment and exposing flames to parts that might leak should be obeyed, including the avoidance of greasy gloves and clothing when handling cutting equipment. Tips with over-size holes should be avoided.

Alloy Scrap

Alloy items in scrap should be separated from regular scrap and all alloy items to be utilized for making repair parts should be sold as special items. A study of copper-content steel used in cars and tanks developed that while this material is coming

Exhibit A—Summary of Scrap Preparation Costs

	Road B	Road D	Road E	Road F	Road I	Road K
Class 7						
Fire boxes	$2.55	$7.70	$4.68	...	...	$2.46
Locomotive boilers only	1.97	2.29	2.48	$1.26	...	2.41
Locomotive boiler complete	...	3.60	...	...	...	...
Vertical boiler	...	2.50	...	...	...	...
Storage tanks	...	1.75	...	...	...	...
Locomotive cisterns	...	1.60	...	...	...	...
Class 8						
Fireboxes—cut up	...	5.00	...	...	...	...
Locomotive boiler cut up	...	1.75	...	...	...	...
Vertical boiler cut up	...	1.40	...	...	...	...
Storage tanks cut up	...	.75	...	...	...	...
Locomotive cisterns	...	.90	...	...	...	...
Class 9						
Cast steel bolster	.40	.96	1.05	...	...	...
Cast steel side frames	...	1.32	1.05	...	...	.80
Class 11						
Steel castings under 300 lb.	...	1.54	...	1.26	$1.44	...
Steel castings over 300 lb.	...	2.38	2.21	...	...	...
Class 18						
Frogs and Switches	...	1.10	1.40	...	.49	.68
Class 21						
Flues and pipe	...	.86	.81	.86	...	.70
Class 22						
Limed iron	...	...	...	...	...	1.10
Class 29						
No. 3 Rail to 2 ft.	...	1.10	...	...	...	.60
Class 30						
No. 1 sheet	...	1.25	...	...	.64	...
Class 35						
Underframes	.72	2.25	1.19	.60	...	1.41
Built-up truck frame	...	1.65	...	...	...	.61
Built-up truck bloster	.38	1.16	...	...	...	...
Brake beams	...	.80	...	...	...	...
Structural shapes	...	1.25	...	...	...	...
Class 45						
Car floors and sides	.61	1.40	...	...	...	1.27

into use in greater quantities, the quantities are not sufficient to require any separation at this time.

The committee recommended changing the A. A. R. Scrap Classification to read: "No. 19—Flues, wrought iron and steel rattled. (In reporting, specify diameters and minimum length.), and No. 20—Flues, wrought iron and/or steel, unrattled. (In reporting, specify diameters and minimum length.)" Most roads rattle their flues before selling. However, a few roads desire to sell some flues without rattling, such as short flues from condemned equipment, and the new classification will permit this method of sale. Diameters and minimum lengths should be given in reporting for there is a high market for graded flues at the present time.

During the year, requests were received for the assignment of classification numbers to special classes of scrap, and the proposed numbers were listed in the report. No cases for arbitration were submitted to the committee during the last year.

Carbide refuse can be substituted for lime in straight lime mortar or in lime cement mortar; it can be substituted for the lime in both interior and exterior plaster, used for waterproofing concrete, as lime in stucco work, to glaze the surface of arch brick, and for making whitewash. Carbide is not recommended for walks to be used for trucking.

A statement of costs and methods now followed by railroads that are dismantling triple valves, angle and cutout cocks in their scrap and dismantling yards is given in a table.

Triple Valves

Road	Number	Man Hours	No. Stripped per Hr.	Brass Obtained lb.	Cast Iron and Steel Obtained lb.
C	104	8	13	728	3,432
D	30	9	3.3	140	850
E	24	8	3	132	864
I	50	4	12.5	214	1,786
K	400	51	7.8	2,700	13,850
			Angle Cocks		
C	224	8	28	336	2,128
D	156	8	19.4	118	850
E	105	8	15.6	146	840
K	100	2	50	150	810
			Cutcut Cocks		
K	100	2	50	150	690

The most economical methods appear to be obtained where a steam or power hammer is available and a cage is used to guard against flying particles.

The report was signed by J. J. Collins, chairman, general foreman, scrap and reclamation plant, Erie; E. J. Becker, district storekeeper, S. P.; D. D. Canavan, general foreman reclamation plant, B. & M.; L. F. Duvall, assistant general storekeeper, A. C. L.; W. B. Gordon, superintendent reclamation and scrap, C. N.; T. J. Hegeman, supervisor, reclamation, C. B. & Q.; J. V. Miller, assistant general storekeeper, C. M. St. P. & P.; W. J. Sidey, suprevisor scrap and reclamation, L. V.; L. L. Studer, district storekeeper, M. P.; E. G. Walker, assistant general purchasing agent, A. T. & S. F.; James Young, assistant purchasing agent, Penna.; and J. C. Kirk (chairman ex-officio) assistant general storekeeper, C. R. I. & P.

Joint Report on Reclamation

The joint committee of the Purchases and Stores, Mechanical and Engineering divisions submitted recommendations for inclusion in the manual of recommended and standard reclamation practices, as follows:

Building Battered Rail Ends

Battered rail ends are repaired by three processes. In process No. 1, the ends are reconditioned by heating with an oxygen and acetylene blow torch and shaped as nearly as possible to original size with a hammer and a flatter, using a hot cut chisel to separate the ends of the rail, adding welded metal if necessary, and smoothing the rail ends with a flatter. In process No. 2, the ends are built up with an oxygen and acetylene blow torch and welded metal is added to permit grinding to a level surface. High carbon or alloy welding rods should be used with oxygen and acetylene methods. In process No. 3, the rail ends are built up with an electrical arc. The rail ends should be preheated to 650 deg. F. before adding metal, using a gasoline preheater. Broken or loose material should be chipped or ground out, then enough welding electrode applied to permit grinding to a level surface, using a power grinder. Grinders should be used to separate the ends after welding. Coated electrodes of high carbon or alloy steel should be used.

Joint Bars

Joint bars should be heated to 1,500 deg. F. in a continuous furnace. In some cases the bars are handled through the furnace by air, hydraulic or mechanical power. When they come out of the furnace at the proper heat, they are put on a power press with dies to restore the bars to their original or a slightly larger contour, or a contour with a crown on top of the bar as required by the user. They are then conveyed slowly through a tank of quenching oil so that they may be heat-treated similar to new bars. The oil in the quenching vat is cooled by circulation and radiation and kept below a temperature of 150 deg. F.

Restoration to the original height is accomplished by gas and electric arc welding methods. Formerly gas-welded joints were smoothed with flatters to a templet. Now, it is the practice to grind both gas and electric welded bars to a templet after building up worn places. Most of this work is done on the line of road at the point of application or adjacent to it. Shims of different types are on the market to take up the wear of bars and rail, and are said to be successful in many cases and more economical than the purchase of replacement bars.

Manganese Frogs and Crossings

Manganese frogs and crossings are reconditioned by electrical arc welding. All broken and fatigued metal should be removed by grinding or cutting with a gas blow torch or electrode. It should be ground after cutting to a clean surface. Welding should be performed so that the parent metal will be kept as cool as possible. Heating 11 per cent to 14 per cent manganese steel to the critical point of 750 deg. F. ruins the casting. Bare manganese steel electrodes 3/16 in. or 1/4 in. in diameter and containing 11 per cent to 14 per cent manganese and 3 per cent nickel should be used. Coated electrodes without nickel may also be used. Peening or hammering the deposited metal is good practice. Electrodes should be deposited at different places on the frog or crossing until it is completely built up, to keep the heat below the critical point. The metal of the frog may be cooled with water to keep the heat within the temperature range. A stainless steel electrode is sometimes used to obtain

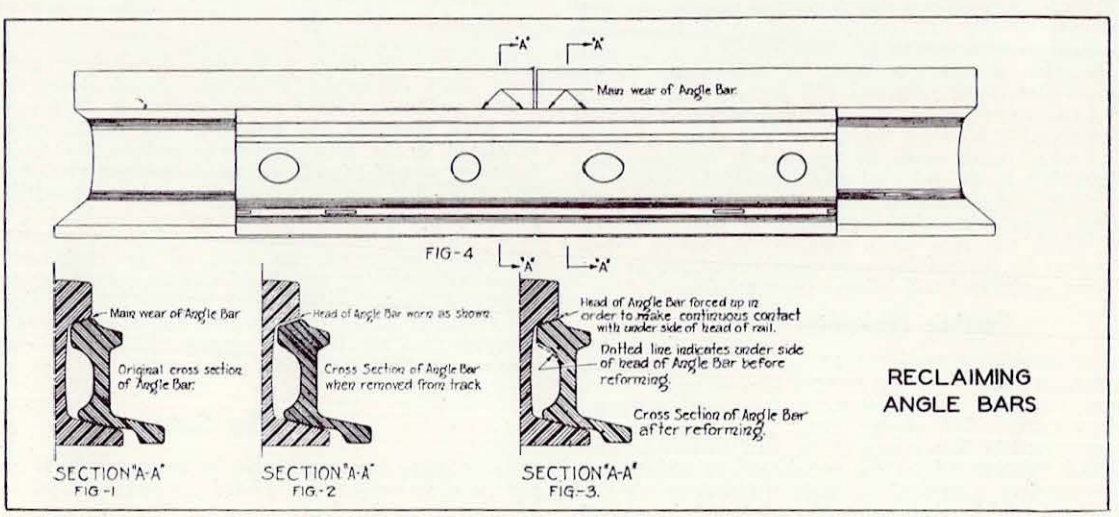

"A" "A"
Main wear of Angle Bar
FIG-4
"A" "A"
Main wear of Angle Bar
Original cross section of Angle Bar
SECTION "A-A"
FIG-1
Head of Angle Bar worn as shown
Cross Section of Angle Bar when removed from track
SECTION "A-A"
FIG-2
Head of Angle Bar forced up in order to make continuous contact with under side of head of rail.
Dotted line indicates under side of head of Angle Bar before reforming.
Cross Section of Angle Bar after reforming.
SECTION "A-A"
FIG-3.
RECLAIMING ANGLE BARS

Diagram Showing Approved Method of Reforming Joint Bars for Rail

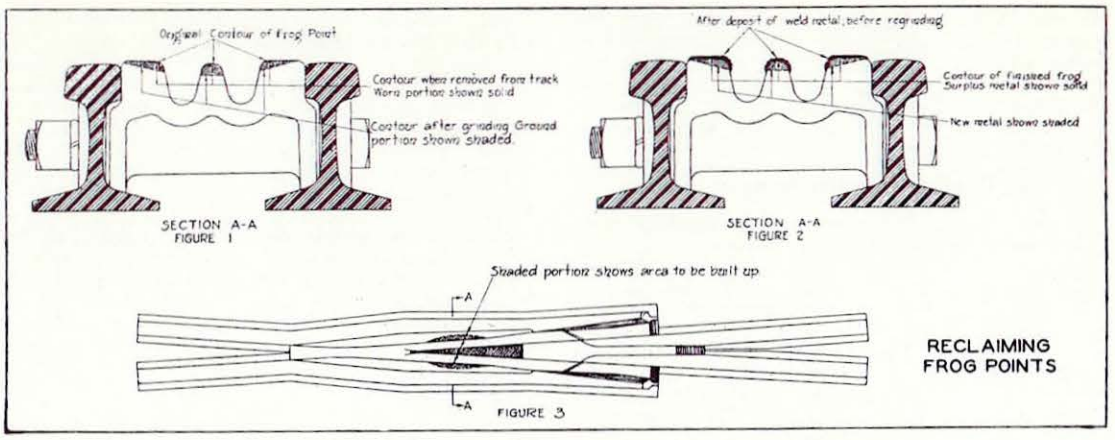

Original Contour of Frog Point
Contour when removed from track Worn portion shown solid
Contour after grinding Ground portion shown shaded.
SECTION A-A FIGURE 1
After deposit of weld metal, before regrinding
Contour of finished frog Surplus metal shown solid
New metal shown shaded
SECTION A-A FIGURE 2
Shaded portion shows area to be built up
A
A
FIGURE 3
RECLAIMING FROG POINTS

Diagram Showing Approved Method of Repairing Frog Points by Welding

a better bond between the deposited metal and the original casting. Grinding is essential to a proper contour.

Maintenance of Equipment

Methods to be followed in the reclamation of couplers, knuckles and parts are outlined in Mechanical Circulars D.V.—759, 761 and 807, and A.A.R. Mechanical Rule No. 23. Methods for the reclamation of additional parts not covered by Mechanical Circulars D.V. 759, 761 and 807, and A.A.R. Rules 18 and 23, include the welding of minor fractures by autogenous methods in the shank of Type D and E normalized couplers building up the anticreep lug in the coupler head of the Type D coupler by autogenous welding methods; gage and swedge; building up Type D coupler lower end of No. 2 lock lifters by autogenous method to conform to gage. The locklifter and the lock thrower should conform to contour gage.

Journal Packing

The A.A.R. standard practices for reclaiming new and renovated journal box packing and car oil are described in Mechanical Rule 66, paragraph B. The committee's finding, after studying many methods in the last decade, is that there is considerable opportunity for improvement. This is not only a major subject, but a serious one. Hot journal boxes, burnt bearings, etc., add tremendous costs to the initial purchase, to say nothing of delays in transportation and poor service, experienced particularly during the winter of 1935-36. This can be attributed to the lack of modern reclamation equipment on some roads and to the practice of applying a poor quality of renovated journal box packing and reclaimed car oil to their own equipment. This practice is not in accordance with A.A.R. Rule 66 for the Interchange of Traffic. It is suggested that cars in interchange service should not be accepted after a specified date, unless the packing is renovated as required under specifications contained in A.A.R. Rule 66.

There is a diversity of opinion as to the specifications for new waste, and car oil. In processing old journal box packing, the entire lot, irrespective of quality, is received, mixed, reclaimed, and again applied to give but one performance. Inasmuch as interchange rules require journal boxes to be packed every 15 months, both summer and winter oil are used. When the summer and winter oils are reclaimed, they become practically a year-round oil. A year-round oil should be used at the reclamation plant and either the summer or winter oil should be used for free oiling, as conditions require. Consideration should also be given to a uniform quality of waste.

Railroads consuming one-half million pounds or more of journal box packing per year have been quick to realize the value of the installation of cemhanical equipment, as the loss of packing and oil can be reduced to 10 or 15 per cent. Large and small railroads have established centralized reclaiming plants costing from $20,000 to $100,000 for buildings and equipment. The cost of reclaiming journal box packing averages from 60 to 90 cents per 100 lb., based on inbound weight, where the operation is handled in a railroad-operated plant. The variations in cost may be attributed to methods of accounting, i.e., store expense, haul, etc.

Crank Case Drainage

The method used in re-refining lubricating oils from internal combustion engines is by heat control, to remove the unstable constituents and accumulated foreign substances from the contaminated oils. Equipment, operations and production have been studied by railroads and aviation, gasoline and Diesel engine manufacturers. The method produces a quality that will meet specifications governing viscosity, stability, emulsion, dilution or retarded breakdown under service. The average cost with modern equipment is 8 cents a gal.

From the reclamation of journal box packing, short lengths of waste can be used for firing up purposes. The sludge from reclaimed car oil can be used as a substitute for high grade oils, as a grease suitable for most bearing parts, for locomotive front end and firebox paint, for road surfaces, and as a rust preventive. Residue from reclaimed motor crank case oil is used as a penetrating oil, for adding machines, clocks, electrical and signal oil, and for typewriters.

The purchases and stores division representatives on the joint committee were: I. C. Bon (chairman), superintendent of reclamation, Wabash E. R. Casey, supervisor reclamation, U. P.; A. L. Prentice, manager scrap and reclamation, N. Y. C.; W. P. Stewart, supervisor of scrap, I. C.; and J. C. Kirk (chairman ex-officio), assistant general storekeeper, C. R. I. P.

Report on Forest Products

A tentative minimum specification for grain doors was submitted to the General Managers' Association in place of the general specification contained in the A. A. R. Grain Circular No. 1, effective January 1, 1922. This specification should be accepted in interchange as a step toward the elimination of many of the complaints received against the poor quality of grain doors that some railroads accept, many of which are not suitable for an initial trip. The committee has been assured of the support of the General Managers' association. The tentative specification was drafted at a meeting held by the forest products committee of the Purchases and Stores division of the A. A. R., April 17, 1935, and was revised on May 6, 1935.

It was agreed that the committee should take no definite action on the National Hardwood Association grading rules for car material until such time as definite action has been taken on the A. A. R. lumber specifications.

The committee made a canvass of the Class I railroads to determine the extent to which the A. R. E. A. tie specifications, adopted in 1926 and revised in 1934, are being used. Members of the committee were assigned various regions. This inquiry developed information from 97 Class I roads, representing a total of 322,268 miles, which was tabulated and discussed. Many reasons were given for not using the A. R. E. A. specifications. All lead to one conclusion, that the question of procurement should be given full consideration when making a cross-tie specification, and that the present specifications should be revived.

If regional committees of purchasing officers would employ a committee to review the actual inspection given ties received by railroads, all railroads would profit. Unless proper inspection is given, a specification has little value, for a railroad accepting a below-grade tie or a tie below the specifications under which the purchase was made, does more harm than any specification can remedy. Rather than deviate from a specification, the railroad requiring a cheap tie should take a smaller tie which is up to grade as to quality. A study made by an unbiased committee in each group would produce valuable information, which can be obtained only through an actual field inspection or a reinspection of ties that each railroad receives in line with the specifications under which the ties were purchased.

It was agreed that any railroad purchasing lumber under

A. A. R. or any other specifications must specify the sizes necessary to meet its standards. While standardization of sizes would go a long way toward facilitating the stocking and purchasing of lumber, until such time as all railroads adopt a common standard size for each member used in car construction, it is difficult to insist on the adoption of any fixed sizes for lumber, either finished or rough.

Car Lumber Specifications

In the 1935 report, the committee recommended a joint meeting with a committee from the Mechanical division on A. A. R. lumber specifications and car lumber. This subject is under consideration. The western railroads, being vitally interested in West Coast woods, are anxious for immediate consideration of their problems insofar as the adoption of the A. A. R. lumber specifications are concerned. A comparison of grades made by the Grading Rules committee of the West Coast Lumbermen's Association indicates clearly the problem confronting railroads using West Coast woods in adopting the A. A. R. lumber specifications.

The report was signed by J. R. McGrenera (chairman), general tie and timber inspector, A. T. & S. F.; C. M. Burpee, research engineer, D. & H.; G. B. Campbell, tie and timber agent, M. P.; James Deery, assistant purchasing agent, Penna.; F. W. Holt, assistant purchasing agent, Erie; L. W. Kistler, superintendent treating plants, St. L.-S. F.; J. E. McNelley, chief tie and lumber supervisor, A. C. L.; G. H. Robison, purchasing agent, O. W. R.R. & N.; C. C. Warne, purchasing agent, N. Y. C.; and H. M. Smith, (chairman ex-officio), general storekeeper, N. P.

Sectional Stores Meetings

By J. C. Kirk*

The plan of holding sectional meetings of stores department representatives originated in the east in 1930 or 1931. The plan was to meet about twice a year at central store points where it was possible to inspect facilities and methods of operation of various railroads. The original organization was called the "Get-Together Club" and the first meeting was held at Reading, Penna. The good obtained from these meetings in the east resulted in the suggestion that the plan be extended to other sections of the country, and in the latter part of 1934 the Purchases and Stores division adopted the plan and organized sectional groups, each with a chairman, as follows:

Eastern Group—A. L. Sorensen, manager of stores, Erie; Southern Group—J. U. King, general storekeeper, Atlantic Coast Line; Western Group—J. C. Kirk, assistant general storekeeper, C. R. I. & P.; Northwestern Group—H. M. Smith, general storekeeper, N. P.; Southwestern Group—L. P. Krampf, supply agent, M. P. Lines; Far Western Group—A. S. McKelligon, general storekeeper, S. P.

The eastern group has held six meetings, with an average attendance of 30, which is a high percentage of the membership. The southern group held a meeting on September 25, 1935, at Paducah, Ky., with 26 present, and a second meeting at St. Augustine, Fla., on January 23 and 24, 1936, with 54 present. The Western group held a meeting at the general store of the C. M. St. P. & P. at Milwaukee, Wis., on January 10, 1935, with 14 present; a second meeting at the general store of the C. B. & Q. at Aurora, Ill., on April 8, 1935, with 19 present; a third meeting at the C. R. I. & P. general store at Silvis, Ill., on October 22 and 23, 1935, with 23 present; and a fourth meeting at the general store of the C. & N. W. at Chicago, on January 22, 1936, with 23 present.

The northwestern group held three meetings at the general stores of the Great Northern, the Soo, and the Northern Pacific in St. Paul and Minneapolis, Minn., the attendance at each meeting being from 18 to 22. The southwestern group has held three meetings, one at Sedalia, Mo., on January 9, 1935, another at Parsons, Kans., on April 11, 1935, and a third at Marshall, Texas, on January 23, 1936, all well attended.

The far western group has held four meetings, the first October 26 and 27, 1934, at Denver, Colo., with 16 stores men present; the second at San Francisco, and Sacramento, Cal., on January 31 and February 1, 1935, with 47 stores men present; the third at Salt Lake City, Utah, and Evanston, Wyoming, on October 15 and 16, 1935, with 22 stores men present; and the fourth meeting at San Bernardino, Cal., January 22 and 23, 1936, with 49 stores men present.

Many Topics Discussed

The subjects included stock simplification, pricing methods, forecasting material requirements, scrap handling and dismantling equipment, stock books, protection of journals on mounted wheels, material savings, line stocks, lumber, shop orders, material classification, exchange of surplus material, keeping check of empty containers, selling cars on wheels versus tearing down, classified material stock report, price differentials for quantity purchases, guarantees on material, manufacture of materials, stationery handling and distribution, simplification of material stocks, reclamation of waste, inventory methods, material handling equipment, capacity loading and prompt handling of cars, new ideas and economies, repairs to brake beams, and scrap handling.

Some of the group chairmen have appointed sub-committees to make special reports at group meetings; and special papers have been prepared and presented by individual members. The far western group has always held joint meetings of both store and purchasing representatives, and because of the distances involved, has held two-day meetings, discussing purchasing matters the first day and stores matters on the second.

* Assistant General Storekeeper, C.R.I. & P., Silvis, Ill.

Report on Forecasting Requirements

Twenty-eight Class I railroads were asked for information as to what had proved of greatest benefit in properly forecasting material requirements and what had hindered its accomplishment. From the replies received, it is clear that there are many factors involved which cannot be reduced to mathematical exactness or set rule.

When the investment in materials is under consideration, the close relationship between operating managements and finance is brought to the fore, and all departments of the railroad, therefore, become vitally interested. To assist in carrying out the principle of a minimum investment, the purchases and stores department on each railroad should arrange meetings of all departmental heads. At such meetings the purchases and stores department can present its side of the material situation and make its recommendations for bringing about reduced investment in materials, at the same time improving stock control and bettering the service of materials and supplies.

Obsolescence is a natural consequence of the improvement which is constantly going on in design, and in the art of transportation. On the other hand, it also results from poorly considered forecasting. Losses can be reasonably reduced where there is regular and well-considered co-operation between departmental heads and the purchases and stores department. Based upon an exposition of conditions as they exist, obsolescence should be a major subject for discussion.

Under conditions which have existed during the last several years, only a reasonably accurate forecast of materials for maintenance of equipment, track, signals and structures and for train operation has been possible. So long as these conditions continue, whether in conjuncton with a budgeting or planning system, there must also be faced daily those problems which arise from such departmental activity, if these intangible but acknowledged losses are to be avoided.

While the foregoing affect proper stock control on every railroad, whether the investment in materials is large or small, many suggestions have been offered in response to the committee's investigation. The stores department should have access to all available information involving future consumption of materials. This directs attention to the necessity for constant and unremitting contact by the stores department with all users of materials. Stores department representatives should be invited to all meetings where the use of materials is a subject of discussion. Stock records are the back-bone of an effective ordering system and should be kept accurately and supported by all obtainable information on future consumption. Appropriate attention should be given to the period of time involved in the preparation and passage of requisitions to the purchasing agent, the procurement of information on prices and the placing of orders, and the normal delivery of material from seller to storehouse. Special programs should be established where actual material requirements are to govern.

Essential knowledge should be obtained of shop or work programs on repairs or new work, which may ultimately involve age of equipment, change in working hours and force, shop and work schedules, operating expense budgets, reclamation, and the estimated gross earnings and loaded movement. Shop rating and shop output records should be provided. Standardization should be promoted as a means of improving delivery. Purchase agreements aid in controlling prices and improving delivery. The purchases and stores departments should jointly discuss price and probable use before purchasing, to obtain price concessions or to avoid price increases. The possible use, in addition to economical machine set-ups, should be studied in arranging for shop-manufactured materials. The desirability of under-ordering rather than over-ordering should be considered.

The committee recommended that the stores department should

be assigned the definite responsibility of forecasting current requirements of materials for equipment and roadway maintenance and for the operation of other departments and through co-operative and co-ordinated action, should assist in forecasting material requirements for such special program work as may not be a subject for executive decision.

The report was signed by C. B. Hall (chairman), stores manager, Penna.; M. E. Towner, general purchasing agent, W. Md.; G. O. Beale, assistant to vice-president, C. & O.; G. J. Hunter, traveling material supervisor, A. T. & S. F.; and J. L. Bennett (chairman ex-officio) purchasing agent, Cent. of Ga.

Report on Pricing and Inventory

To determine the extent to which recommendations of the Division adopted in 1932 are being followed, a questionnaire was submitted to the railroads, and 70 railroads reported. Pricing performed direct by the issuers of materials in accordance with the recommended practice was reported by 15 roads. The older practice of pricing from price books or price cards in offices was reported by 55 roads.

Railroads using the direct pricing method report several advantages. It places the pricing of materials in the stores department, which is obviously desirable. It requires no additional force. It reduces clerical work in the office. It increases accuracy. It expedites pricing. It prevents congestion of requisitions to be priced. It facilitates pricing the annual inventory. It overcomes the difficulty of pricing material orders and requisitions arising from illegibly written and improperly described orders. It educates stores men, as well as others, as to the value of material. It enables the using department supervisors and foremen to regulate and allocate expenditures for material. It stimulates greater effort toward conservation of material by utilizing secondhand and reclaimable material, and obviates the use of higher priced material or the purchase of new. It informs users in many instances as to the costs of materials. It reduces fluctuations in material accounts by using the actual price rather than the last price. It eliminates considerable detail work in arriving at average prices. It appreciably reduces inventory adjustments by using the actual price of material and not the last price or average price. It reduces mistakes resulting from the pricing from memory. It encourages stores employees to check the price of technical stock which is not bought on a competitive basis and guards against any flagrant overcharges on such stock.

Railroads that have not adopted the recommended practice of direct pricing advance the following reasons for not doing so: No economy; increases costs; no increase in accuracy; will not fit present arrangements; no additional advantage; not practicable; no section stockmen; present system satisfactory; necessitates reclassification of certain employees at increase in rate; have centralized accounting; present system of centralized accounting costs less and results in fewer adjustments; pricing done in auditor's office; too often material would not be priced as it would be used before the delivered price could be secured; attendants not as accurate as clerks; attendants would not price as issued if rushed and would later try to price from memory; do not believe accuracy gained would warrant additional cost; think direct pricing has considerable merit, but do not believe justified in adopting it at this time account of increased cost; waiting until it is adopted by more railroads; have not had opportunity to study direct pricing system, but favor present system of pricing from stock book.

The proponents of direct pricing have advanced several attractive and interesting features. It is also to be remembered that such proponents have had experience with both methods. If direct pricing will instill in those handling materials a broadened practical knowledge of material values, the method would appear deserving of study and consideration, even though no actual economy in pricing costs would be realized; the railroads adopting the direct pricing system have effected some economies, have increased their accuracy in pricing materials, and have found that the system has worked out advantageously in many other ways.

As the term bin pricing does not adequately describe the system of pricing materials direct by the issuers, it is suggested that this system be called the direct pricing system.

Inventory

While nothing new has been developed in the method of taking inventories, the committee directs attention to the methods employed by several of the railroads in which cards or sheets, good for an indefinite number of years, are used; thus eliminating the work and cost of writing the description of the items each year, which forms tend toward more accuracy, inasmuch as they permit ready comparison each year, both as to quantities and prices.

The report was signed by V. N. Dawson (chairman), district storekeeper, B. & O.; U. K. Hall, general purchasing agent, U. P.; C. A. G. Blomquist, stores accountant, C. of Ga.; F. I. Foley, general storekeeper, N. Y. N. H. & H.; and C. H. Murrin, (chairman ex-officio), general storekeeper, L. & N.

Report on Purchasing Practices and Records

Railroads that adopted the combined requisition-purchase order to eliminate the writing of purchase orders from a previously typed requisition include the Boston & Maine, the Canadian National, the Chicago, St. Paul, Minneapolis & Omaha, the Chesapeake & Ohio, the Central of Georgia, the Illinois Central, the Maine Central, the Pennsylvania, the St. Louis-San Francisco, the Union Pacific, the Erie, and the Lehigh Valley.

Operations in the storekeeper's office that can be eliminated by this system of ordering include the pricing and extending of requisitions, inserting firm name, order number and date on requisition; and checking items on order against items on requisitions. Operations in the purchasing office that can be eliminated are: Writing orders from requisitions, checking orders against requisitions, errors in quantity and description that may occur in rewriting, elimination of requisition files, loss of time in placing orders on vendors, requisition forms, carbon paper and binders, and reduction in typewriter equipment, desks, chairs, etc.

The storekeeper is vitally interested in the lapsed time between the date he needs material and the date his order is placed. By the use of this new method of ordering, the time is cut to a minimum of probably three days, which has a decided bearing upon investments in materials and supplies, and should result in a greater monthly turnover.

Railroad Business Mail

The committee called attention in its 1935 report to the A. A. R. Transportation division Circular D-11-78, regarding the proper handling of railroad business mail, off-line and on-line. The Transportation division has re-issued these instructions during the current year. Railroads that are not taking advantage of this privilege are creating expense which can be avoided in the handling of railroad mail, particularly the exchange of surplus lists.

Some railroads have found it desirable to permit the general storekeeper to release material for shipment direct with the manufacturer through release orders. These release orders cover items specifically listed by the purchasing department,

Annual Inventory of Stores Department

Class..... Sheet No..... Item	Condition	193				193				193				193			
		Quan.	Unit	Price	Amount	Quan.	Unit	Price	Amount	Quan.	Unit	Price	Amount	Quan.	Unit	Price	Amount
TOTALS																	
INITIALS																	

(Initials of person handling to appear at bottom of each column)

Proposed Form for Keeping a Record of Annual Inventories for Several Years

showing the prices to be paid on the regular order form. This method has been found effective, particularly where general stores are located at some distance from the purchasing department.

Tracing for Material

On a number of railroads a postal card requiring one cent postage, appropriately worded, is being used for tracing material as a substitute for a typewritten or form letter enclosed in an envelope requiring two-cent or three-cent postage. A minimum of effort is required in the use of the postal card with a resulting saving of 50 per cent to 60 per cent in postage. No carbon copy requiring matchups and filing is necessary, as a notation can be made on the office copy of the purchase order on the date of mailing, which is all that is necessary for a record.

Statistical Data

Some railroads have accounting machines in their accounting departments. By utilizing these facilities, statistical data pertaining to purchasing department activities could be obtained resulting in more detailed statistics available when wanted at less cost than the present practice of compiling. Some railroads are now using these facilities for such data as the value of monthly purchases, sub-divided by individual commodities, showing unit prices and value.

The report was signed by H. M. Rainie (chairman), purchasing agent, B. & M.; G. M. Betterton, purchasing agent, S. P.; John Eaton, assistant to general purchasing agent, C. P.; W. E. Evans, purchasing agent, G. T. W.; J. W. Hagerty, general supervisor, office of purchasing agent, Penna.; A. J. Neault, assistant purchasing agent, C. & N. W.; A. A. Taylor, assistant purchasing agent, M. P.; and F. S. Austin (chairman ex-officio), assistant purchasing agent, N. Y. C.

Report on Stationery and Printing

The committee has given consideration to the possibility of adopting standard specifications for forms which are common to all railroads. Much economy will result from such action, but to cover all forms coming within this scope, it will be necessary to continue investigations. It is understood that to recommend a change in the size of forms prescribed in Railway Accounting Procedure, it will be necessary to have the cooperation of the Accounting division. Tentative specifications were presented for bills of lading, shipping tags, envelopes, baggage checks, company waybills, and No. 19 train orders.

The report was signed by O. B. Mills (chairman), stationery storekeeper, Penna.; W. J. Duff, stationer, A. T. & S. F.; B. B. Melgaard, assistant to purchasing agent, C. M. St. P. & P.; G. E. Perrot, stationery supervisor, S. A. L.; M. L. Tynan, general purchasing agent, Railway Express; J. T. Van Horn, stationer, M. P.; and G. H. Walder (chairman ex-officio), purchasing agent, C. M. St. P. & P.

Report on Fire Prevention

The report of the Railway Fire Protection Association shows that stores departments during 1934 had 121 fires with a total loss of $25,430 for buildings and materials. During the last seven years there have been a total of 1,225 fires, with losses of $561,677. These losses, when classified into groups, show approximately the following: 37 per cent from unknown causes, 20 per cent from smoking, trespassers, incendiarism, spontaneous combustion, etc., 16 per cent from exposure and lightning, 10 per cent from hot coals, sparks, gasoline power and motors, 9 per cent from lighting equipment, 6 per cent from open flame torches or burning right-of-way, and 2 per cent from improper construction and insulating equipment.

Storehouse Fires

	Storehouse and Contents		Crossties and Lumber	
	Fires	Value	Fires	Value
1931	44	$57,385	146	$47,353
1932	32	41,774	123	14,781
1933	25	20,963	13	13,624
1934	65	15,652	56	9,778

The report was signed by J. W. Watkins (chairman), assistant to general storekeeper, L. V.

Scrap Proposal No.....

.....RAILROAD

OFFICE OF PURCHASING AGENT

.....19

Gentlemen:

TERMS OF SALE
(as recommended by Scrap Classification Committee)

.....Purchasing Agent.

SCRAP FERROUS AND NON-FERROUS METALS AND OTHER MISC.

Classification No.	FERROUS Net Tons		NON-FERROUS AND OTHER MISC. Pounds		PRICE		F. O. B. POINT	FINAL DESTINATION	RAILROAD DELIVERY
	For Sale	Desired	For Sale	Desired	Ferrous (N. T.)	Non-Ferrous and other Misc. (Lbs.)			

(A. A. R. Scrap Classification to be printed on reverse side.)

The undersigned agrees to pay prices named for such scrap materials as may be awarded, subject to all the terms and conditions stated on this form.

Date of bid ..... 19.....

.....
(Signature)

.....
(Address)

Recommended Form for Obtaining Quotations from Bidders for Scrap

Report on Simplification and Standardization

To ascertain what has been accomplished in this work, the railroads were requested to furnish various information. A total of 33 railroads replied. Of these, 12 roads reported that committees have been formed. These committees apparently operate in principle according to the recommendations adopted at the 1934 annual meeting. Two of the 12 appoint committees for specific studies, while the bulk of simplification is accomplished through routine efforts of a person or department to whom the work is delegated. Committees on some of the roads have been established only a short time. On three roads, mechanical and engineering advisory committees are responsible for simplification. Four roads stated that simplification is an active subject on their lines.

Containers

Replies to a questionnaire on the practices followed in handling reels were as follows:

Q. Who is directly responsible for return to vendor? A. (32

roads) Stores department; (2) User or consignee; (1) General storekeeper, or, at outlying points, the user.

Q. How is this party informed as to shipping directions? A. (4 roads) Standing shipping directions are used; (5) By purchasing department on request; (14) By purchasing department order or letter; (1) By auditor; (6) By general storekeeper, order or letter; (1) By supply agent; (3) Information taken from invoice; (1) No answer.

Q. Are they returned from point of use of material to general store or some central point, or direct to vendor? A. (22 roads) Returned to storehouse or general store; (9) Returned to storehouse or general store as a rule, sometimes direct to vendor to save back haul or when returning reels from a large project on line of road; (4) Returned direct to vendor.

Q. Who keeps the record of reels while in the custody of the railroad company? A. (1 road) Keeps no record; (1) Auditor keeps record; (1) Registrar of containers; (2) Purchasing department; (30) Stores department, using original papers, card record or book record.

Q. Describe procedure in transferring reels, loaded or empty, from point to point on the railroad. A. Procedure too varied to be summarized.

Q. Are reels charged out with the material and the same account credited upon return of empty reel? A. (3 roads) No answer; (8) No; (15) Yes; (1) Debited and credited through stores expense; (6) Charged to material account; (1) Charged to appropriate container account; (1) Charged to clearing account.

Q. What is the procedure, when returning reels to vendor, to insure the obtaining of credit? A. Replies too varied to be summarized.

Q. Are identifying numbers assigned to reels or marked thereon to facilitate follow up? (2 roads) No answer; (23) No; (6) Yes; (4) Railroad numbers are assigned and marked on reels only when the manufacturer does not identify his reels by number.

Q. Are drums handled in the same way? A. (1 road) No answer; (22) Handled in general same as reels; (2) Return same number drums as are received except where drums are billed to railroad by individual drum indentification; (10) Some variations from procedure in handling reels.

The committee is agreed that uniformity in practice merely for uniformity's sake is of no particular value. The recommendations that follow are in recognition of fundamental principles which should avoid duplication of effort and records and facilitate the return of containers for credit in the quickest possible time.

Dispatching for Stores Delivery of Material on the Denver & Rio Grande Western

Recommendations

The committee made several recommendations, as follows: The stores departments should be responsible for the return to vendors of empty containers. Shipping directions for the return of containers should be set up as standing instructions in alphabetical order by vendors. Stores departments should arrange for the return of containers in such a manner as will entail a minimum amount of handling, hauling and transportation charges and a minimum delay in returning them to vendors, either direct from point of use or through the stores point, as best meets local conditions. Stores departments should maintain such records as may be necessary to enable them to accomplish the prompt return of containers for credit. Transfers of containers on the railroads should be handled by the stores departments as best suits their individual conditions. The debiting and crediting of container values should be handled in conformity with the accounting practices of each road.

Storekeepers, upon the return of containers, should notify the officer responsible for procuring credits, with copy of container identification data, and shipping papers and the value of the reels. Manufacturers' names and reel numbers should be made the basis of identification in all record and transactions

STANDING SHIPPING INSTRUCTIONS FOR RETURN OF CONTAINERS

Name of vendor and kind of containers	Return to (Address)	Information
..... Reels	.....	Freight charges collect. Credit allowed.
..... Drums	.....or to.....	Charges prepaid according to point from which the drums were shipped to us. No credit allowed as we are not charged for drums on original invoice.
..... Carboys	.....	Freight charges prepaid. Credit allowed.
..... Drums	..... care of.....	Freight charges prepaid. Credit allowed.
..... Drums	..... via John Doe R. R.	Freight charges prepaid. Credit allowed. Bill to be made.

Form Proposed for Keeping a Record of Shipping Instructions to Vendors, Arranged in Alphabetical Order

if such numbers are marked on the reel. If not marked by the manufacturers, then the receiving storekeeper should apply a number for identification purposes. Manufacturers should be requested in all cases to mark on their reels the purchaser's name and requisition or order number, and this number can be used for identification where the manufacturer does not number the reels. Purchasing agents should arrange with shippers for the return of their drums on the basis of the number of drums furnished, rather than on the basis of individual drums.

Information was received from the manufacturers as to the number of different wheel sections they have been selling the railroads during the last five years and the number of railroads purchasing each section. A large percentage of the total number of sections have been purchased by one road only. Considering the cost of setting up the machines for making each section, this condition results in considerable waste which could be avoided by simplification. It is recommended that a tabulation of the information obtained be referred to the mechanical division.

Common Item Numbers

Some manufacturers use a system of numbering items which definitely identifies each item. Air brake piece numbers are a familiar example. The committee recommended that railroads consider carefully the use of such numbers, prefixed by the classification account number, as their item numbers. This is now being done by some railroads.

Since there has been some confusion in the grade markings of abrasive products, a comparison of grade markings and also a comparison of abrasive characteristics furnished by one of the manufacturers of these products was given in the report. Attention was also called to the possibility of saving by substituting the use of Aluminum Oxid paper for Aluminum Oxid metal cloth where the contour of the surface ground is such that flexibility of abrasive backing is not important and where tensile strength is not required in the operation. Orders for coated abrasives should state whether open or closed coating is

Steel sheets	Sizes before simplification	Sizes after simplification
Flange boiler	64	21
Flange circle boiler	23	4
Firebox	174	49
Soft open hearth tank sheets	270	28
Total	531	102

desired and should specify the weight of backing to be furnished.

One railroad made a study to simplify boiler and firebox sheets and the results were given as information.

One railroad reported that copper sheets, both hard and soft drawn, are purchased in rolls, in weights 21 oz. and thinner, and cut to required sizes as used. Sheets heavier than 21 oz. are purchased in manufacturers' standard size sheets, approximately 30 in. by 60 in. and sheared to the proper size, as needed. This road reports a saving of ½ to ¾ cents per lb. below what it previously paid when buying all sheets sheared to size.

The report was signed by A. G. Follette (chairman), general material supervisor, Penna.; B. T. Adams, district storekeeper, I. C.; H. Crouse, general storekeeper, T. & P.; W. R. Culver, general storekeeper, C. & O.; J. L. Irish, general storekeeper, U. P.; R. D. Long, purchasing agent, C. B. & Q.; C. A. Nichols, assistant general storekeeper, N. P.; J. W. Wade, general storekeeper, N. & W.; and L. B. Wood (chairman ex-officio), general storekeeper, S. P. Lines in Texas and La.

Purchasing in Standard Packages

H. M. Hobson

By Herbert M. Hobson*

The railroads have studied standard package arrangements on certain materials but have we gone far enough? The writer suggests a careful analysis of each A.A.R. material class to discover items which will lend themselves to standard packaging. With this information, recommendations could be drawn for submission to reputable manufacturers or shippers to determine their ability to handle and the effect on costs. The study should not be confined to individual railroads, because what is good for one railroad should answer for another.

Cut Handling Expense

Improvement will be reflected in stores expense. Material received in standard packages is much easier to receive, count and place in stock. All items now received in bulk are laboriously unpacked, counted and checked, moved to material racks or platforms and each item unit piled. With material in standard packages, properly labeled to show the contents of packages, the time and labor consumed in stock taking are reduced and incorrect counting is practically eliminated. Standard packaged material conserves space by eliminating the necessity for strips and dividers which are otherwise necessary in storing bulk materials. Standard packaged materials speed up receiving operations, and receiving reports are prepared more promptly and accurately. If standard packages are developed on a sound, practical basis, the work of counting and preparing material for shipment to other stores and departments is greatly reduced. The packaging should be developed so that division stores of reasonable size, and district stores, would make up their transfer requisitions on the general store by specifying materials in quantities or multiples of the standard packages. The saving in time, if transfer requisitions are so prepared, will amount to a considerable sum in a year.

Orderly, neat clean material storage is much easier and less costly if items are received in standard packages. Another consideration is the protection afforded material when packaged. Many items with finished surfaces and exposed threads are easily damaged and sometimes made unfit for use by rough handling. The opportunity for damage is practically eliminated if material is purchased in packages.

Manufacturers and shippers of electrical materials seem to have adopted the standard package idea more generally than other firms. Incandescent lamps in the smaller sizes are packed in cartons of 120 lamps, but who decided that 120 lamps are the correct quantity for a carton? From a stores department standpoint, cartons of 60 would be better. A store of average size could, without burdening its stock, order in this quantity, or multiples thereof, which would save breaking many present size containers to fill smaller orders and eliminate packing expense when original cartons are broken. Another item of importance is small gage electric wire. Some firms ship wire in cartons of 500 ft. each, others ship the same wire on wooden reels, 2,000 to 3,000 ft. There is no difference in price, but the difference to railroads in material handling is great. After the wire received on wooden reels is measured off the reel for issue, there is still the empty reel to return to the shipper. On every railroad a close follow-up is necessary to insure the return of the empty reel to obtain credit to offset any charge made by the shipper for the reel. Other items of electric materials are received in standard packages. In some, the size and quantity are satisfactory, in others they are not.

Pipe fittings, particularly 300-lb. pressure fittings, are purchased and used principally by railroads; therefore, firms should package them in a manner which would be more practical and better fit our problem of handling and storage. The present method of shipping pipe fittings loosely in burlap bags, boxes, barrels and kegs, should be remedied. Any additional expense involved in packing will be slight compared with the savings in reduced handling costs. Additional items of material subject to uniform and standard packaging, with real savings for railroads, are nut locks, staybolt caps, superheater shields and copper ferrules; also repair parts for air brake equipment, fire doors, flange oilers, feed water heaters, injectors, lubricators, bell ringers, sanders and stokers. Practically all of these items are used exclusively by railroads and it should not be difficult to get manufacturers and shippers to co-operate in packaging them.

* Stockkeeper, Louisville & Nashville. Annual contest paper.

Purchasing Department Needs

F. I. Kroesen

By Franklin I. Kroesen*

The stores department of a modern railroad has definite needs which the purchasing department should satisfy, and the purchasing department has equally definite needs which bespeak the aid and co-operation of the stores department. The purchasing department clearly recognizes its primary duty to procure material within the required time so that normal functions of the railroad will not be interrupted. The gain to the railroad as a whole, however, is small if there is a lack of understanding by the stores department of the manufacturing problems which must be considered in obtaining materials.

The development and maintenance of friendly relations between the railroad and its diversified sources of supply are of great importance. These sources of supply are actual or potential shippers, and their good-will is probably the greatest of the railroad's intangible assets. The emergency created in Pennsylvania by the recent severe floods served to demonstrate the spirit of co-operation that commonly actuates these sources of supply for the railroads. Extraordinary demands from the railroads brought responses both gratifying and satisfactory. The sellers of railroad materials are not only willing to co-operate to the fullest extent under normal conditions, but are equally willing to render essential aid in emergencies. Maintaining this attitude of suppliers is the duty of the railroad's entire service of supply.

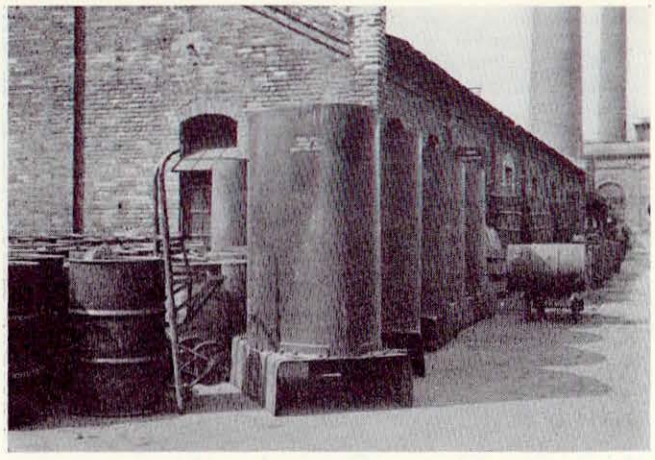
The purchasing department needs from the stores department an understanding of the problems in obtaining the materials from these sources of supply. In the larger construction projects involving new rolling equipment, additional facilities or extensive repair programs, the purchasing department needs the earliest advice from the stores department as to quantities and kinds of materials that will be required, in order to meet the predetermined schedules and to develop the most advantageous terms, prices and delivery.

Again, the purchasing department, in its contacts with the stores department, is daily in need of candor and fair play. Failure to consider all the circumstances results in erroneous action. It is not unreasonable for the purchasing department to expect the stores department to exhibit a willingness to assume responsibility for its own mistakes. The purchasing department also expects the stores department to base its delivery requests upon first-hand knowledge. Only in this way can situations be avoided in which the delivery of materials within 12 hr. is demanded, and the material is not used for two or more days.

Report on Special Devices

Prior to the purchase of patented special devices, consideration should be given, in certain cases, to obtaining the patent rights under which the purchaser would be permitted to manufacture and use the devices. One road reports that some years ago it purchased the rights for itself and subsidiaries to use a screen stencil process by paying a nominal fee to the patentee. This

* Clerk, purchasing department, Penna. Annual contest paper.



Oil Tanks Mounted on Skids on the Chicago, Milwaukee, St. Paul & Pacific

process reduced the labor costs on certain maintenance of way signs approximately 75 per cent to 90 per cent.

Materials and devices covered by patents include patented devices or materials which are now in use on various railroads and which, after being subjected to actual service, have proved their worth. Such materials and devices constitute a real problem because there are so many patented devices in use which are practically indispensable from the standpoint of facility in operation, safety and economy. The firms controlling such products are influenced primarily by cost, volume and competition in establishing prices, the last factor being the most potent. Patented devices or materials also include items which may be developed in the future, or which have just been developed, but have not yet proved their worth for general use. It is extremely difficult to predict with certainty the ultimate relative value or extent of use for such items.

Patent Protection

Many articles which were originally devised in railroad shops have appeared on the market in patented form. The protective plan followed by one railroad is to have a blueprint covering the newly developed article dated, attested to and witnessed, where it is not considered necessary to secure a patent.

Repairs for Patented Articles

It should be clearly understood that there are no patents which prevent railroads from buying suitable common articles in the open market for the assembly of a patented article, even though such items may be assigned a piece number in manufacturer's catalogue. In view of the nature of many developments in use or in the making, little could be accomplished in making such information available to other roads except through actual conference. It is therefore recommended that more consideration be given to finding out on the ground what each road is doing.

In purchasing of repair parts for special devices, whether from the manufacturer of the complete device or in the open market, the following recommendations are made:

1. Obtain prices on various quantities so that a supply can be obtained on the best basis. Even though the repair item is ordered specially to get a machine in service, prices should be obtained at the same time on a larger quantity.

2. Analyze carefully the construction of the repair part to determine what material is used in its construction, the character of the machining on the finished part, and the cost per pound.

The report was signed by G. W. Leigh (chairman), purchasing agent, M. St. P. & S. S. M.; P. L. Grammer, assistant purchasing agent, Penna.; J. F. Duffy, stores representative, Erie; A. N. Laret, assistant to chief purchasing officer, St. L.-S. F.; and A. S. McKelligon, general storekeeper, S. P.

Report on Material Guarantees

The fact that all railroads carefully select their sources of supply, and deal only with reputable manufacturers is the best safeguard to securing the expected life or results from material purchased. Failing this, the buyer is at all times in a position to obtain a fair adjustment without recourse to a specific guarantee accompanying each transaction.

Inspection and acceptance of commodities furnished in accordance with the producers' specifications do not relieve the manufacturer of responsibility for any inherent defects in material or workmanship which may develop during the life of the material. It is the accepted practice of all reputable manufacturers that they will replace or adjust to the satisfaction of the purchaser any claims arising from defects which develop after acceptance by the purchaser.

As a protection, a condition on the regular purchase order blank should cover guarantees, and the one recommended by the 1935 committee should serve the purpose.

To the list of materials covered by specific guarantees formerly referred to by this committee, several items have been added on which specific guarantees have been obtained. The previous list included open hearth steel rails, cast or wrought steel car wheels, cast iron car wheels, storage batteries, draft gears, cast steel tender frames, cast steel bolsters, cast steel tender trucks for locomotives and car and locomotive springs.

Additional items are dehydrated window sash, rubber cushion seats, water treating devices, refrigeration control, transmission and control equipment, automobile and bus and truck tires, air conditioning machines and parts, power plants, pliotron tubes, roller bearings, wet and dry rectifiers, and motor cars.

This list contains items pertaining to the air conditioning of passenger equipment. Specific guarantees should be obtained in the purchase of this equipment, in view of the fact that it is in the development stage, and failure of any part or parts would prove very expensive to the railroad if not properly guaranteed.

The practice of handling failures through reports by the using department to the general storekeeper is the proper method to follow. The stores department in contact with the using department should emphasize particularly the necessity for obtaining prompt reports of all material failures.

The report was signed by W. A. Clem (chairman), purchasing agent, Reading; W. J. Adams, requisition marker, Penna.; E. A. Jones, purchasing agent, L. V.; L. L. King, assistant purchasing agent, I. C.; J. E. McMahon, assistant purchasing agent, C. St. P. M. & O.; and G. E. Scott (chairman ex-officio), purchasing agent, M-K-T.

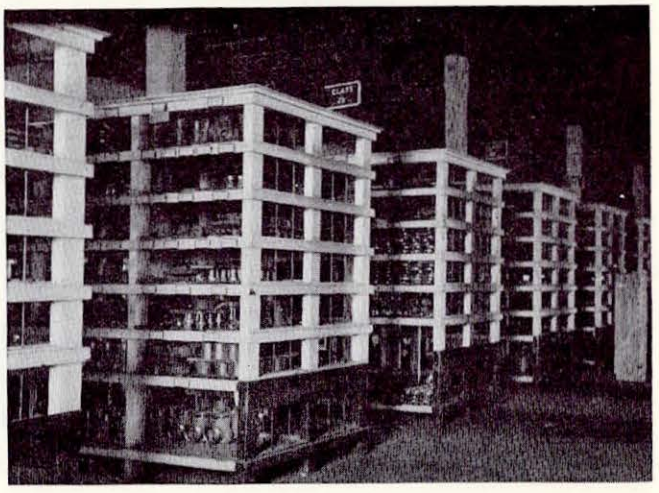
Report on Handling Materials

The committee directed an inquiry to practically every Class I railroad in the United States and Canada to learn of any new construction of major stores buildings or other facilities, to obtain blueprints of any new bins, racks or other novel storage facilities, to obtain descriptions and prints of any special material-carrying devices designed better to protect against damage in transit or pilferage, to obtain information as to any special development of skids, trailers, etc., and to obtain information concerning the handling of ice for air-conditioned coaches and for local consumption.

There was no construction of major store rooms or oil houses during the past year, and but two small local stores of wood construction have been erected. There were no new developments in roadway construction during the past year and the committee concurs in recommendations of previous reports that concrete roadways should be provided for the arterial routes and the various combinations of cheaper construction for the secondary roadways.

Storage

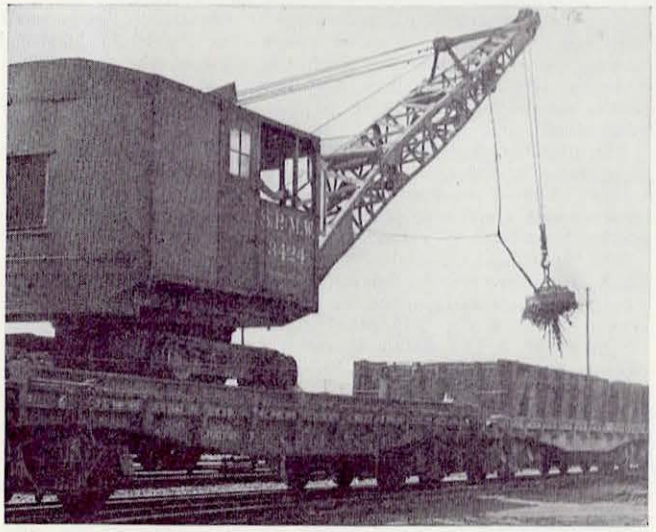
The committee reviewed the various developments of the past year in shipping containers, skids, pallets, racks, etc. De-



Shelving in the Stores of the Chicago & North Western

vices in use on various railroads about which the Division can furnish information on application include facilities for cleaning oil and paint drums and smaller containers; a container for bell cord; a triple valve storage rack; a tractor trailer, shop made; an all metal shop-made warehouse truck; a permanent wheel loading device for flat cars; an open-type wood storage rack; a rack of scrap angles for outside materials; a rack for car lumber; a device for handling 6 couplers at one time; a device for handling 24 steel door posts at one time; a device for handling 6 draft gears at one time; a truck for handling ice used in air conditioning; and a trailer for moving 11 pairs of wheels at one time with a tractor.

Other devices include a trailer for handling jacket steel and similar light stock; an automatic device for cutting rod cup grease; a safety hook for handling springs; an air motor used in cranking gas-operated tractors and cranes; short bands of scrap air brake hose for the striking end of cold cut chisels;



Magnet Crane Used in Supply Train Operations on the Southern Pacific

a broom storage rack; a trailer with dump body for handling rubbish; a trailer to handle four skids at one time; a canvas storage and measuring rack; a canvas storage rack on wheels; covers for coil rope; rotary trays for storing small items of current issue; and skids for handling 8½-in. air pumps, brake beams, triples, air hose, etc., tires, oils, wire cable on reels, journal box packing, bulky materials, company baggage shipments, locomotive headlight generators and armatures for air conditioning units.

Ten roads use ice for car cooling. Two roads obtain ice in carload lots and use it direct from the cars. Seven roads deliver it direct to passenger stations with ice companies' trucks prior to the arrival of trains. The general practice is to charge ice for air conditioning direct to account 402. The actual work of placing the ice on cars and recording quantities received and used is under the jurisdiction of the mechanical department. Information indicates that a saving can be made in congested terminal districts by having ice delivered from ice plants in carload lots for distribution by a company-owned truck. One road reported a gross saving of $1.70 a ton on the purchase price, which represents a reduction of approximately 40 per cent.

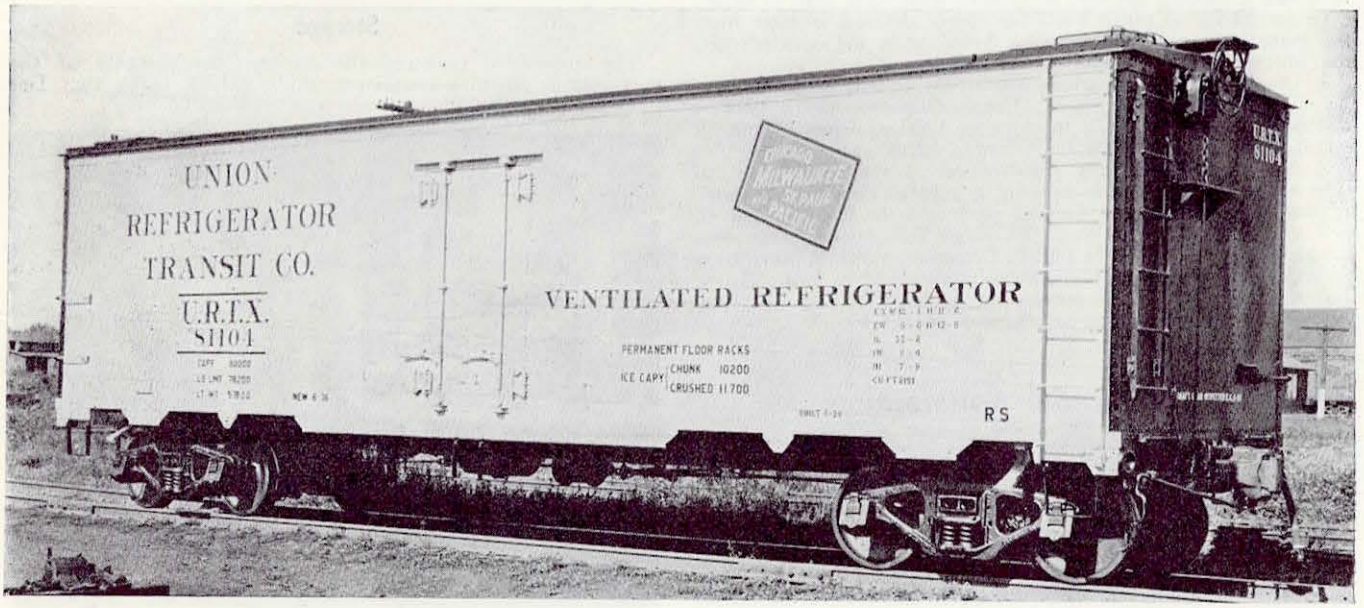
The report was signed by E. H. Hughes, (chairman), general storekeeper, K. C. S.; S. A. Hayden, general storekeeper, M-K-T; E. W. Peterson, general storekeeper, B. & Aroos.; and L. P. Krampf (chairman ex-officio), supply agent, M. P.

Steel Refrigerator Adopted as Standard

AFTER about two years of experimental service in which unusually satisfactory results have been secured, the General American Transportation Corporation, Chicago, has definitely adopted steel-sheathed refrigerator cars of the type illustrated as standard for the shipment of general refrigerated products, such as fresh meat, fruits, vegetables, etc. This car, now being built in quantities for the Union Refrigerator Transit Company, General American subsidiary, incorporates the latest features of the A.A.R. construction as well as a number of improvements in detail design introduced as a result of the General American tests.

These cars are 41 ft. 8 in. long over the striking castings and 33 ft. 2¾ in. between bulkheads. They are provided with 3½ in. of insulation on the floors and roofs and 3 in. of insulation in the sides. One of the features of this insulation is the provision of an air space between the insulation and the steel sheathing designed to prevent any condensation on the inside of the steel sheathing from moistening the insulation.

The floor is conventional 1¾-in. tongue-and-groove, but this in turn is covered with two layers of tarred paper and coats of mastic with a final sanding of the surface, which provides a smooth, watertight floor. The doors are equipped with a double rubber seal of General American design which tends to prevent heat leakage



Steel-Sheathed Refrigerator Car Adopted as Standard by the General American Transportation Corporation

and does away with the troublesome bevel-type door heretofore used. These doors have double-locking mechanisms with articulated hinges that insure a tight seat at all points of contact.

The hatch covers are made of non-skid steel plate, and the plugs are of a double-seal design to insure tighter fits than the usual bevel plug. The cars are equipped with divided basket bunkers, with steel louvres, grating and supports, all heavily galvanized. The cars are also equipped with the latest Type AB brake and a shock-absorbing truck that prevents vertical oscillation.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended July 4 totaled 649,759 cars, a decrease of 63,880 cars as compared with the preceding week, because of the holiday on Saturday, but an increase of 178,633 cars, or 37.9 per cent, as compared with the corresponding week of last year when the holiday occurred on Friday. All commodity classifications showed increases as compared with last year, but all except grain and grain products showed decreases as compared with the week before. The summary, as compiled by the Car Service Division of the Association of American Railroads, follows:

Revenue Freight Car Loading

For Week Ended Saturday, July 4

Districts	1936	1935	1934
Eastern	137,483	104,515	111,124
Allegheny	130,177	87,286	103,528
Pocahontas	44,524	24,022	35,035
Southern	90,121	67,538	69,152
Northwestern	101,007	73,942	75,697
Central Western	98,340	72,529	82,666
Southwestern	48,107	41,294	43,539
Total Western Districts	247,454	187,765	201,902
Total All Roads	649,759	471,126	520,741
Commodities			
Grain and Grain Products	41,972	23,878	37,152
Live Stock	11,396	8,615	15,554
Coal	105,469	50,161	81,438
Coke	7,994	4,538	4,135
Forest Products	30,910	21,952	17,373
Ore	45,337	30,687	29,372
Merchandise L.C.L.	142,052	133,575	137,968
Miscellaneous	264,629	197,720	197,749
July 4	649,759	471,126	520,741
June 27	713,639	616,863	646,003
June 20	690,716	567,049	623,322
June 13	686,812	652,111	618,881
June 6	695,845	629,712	616,768
Cumulative Total, 27 Weeks	17,240,629	15,631,855	15,957,364

Car Loading in Canada

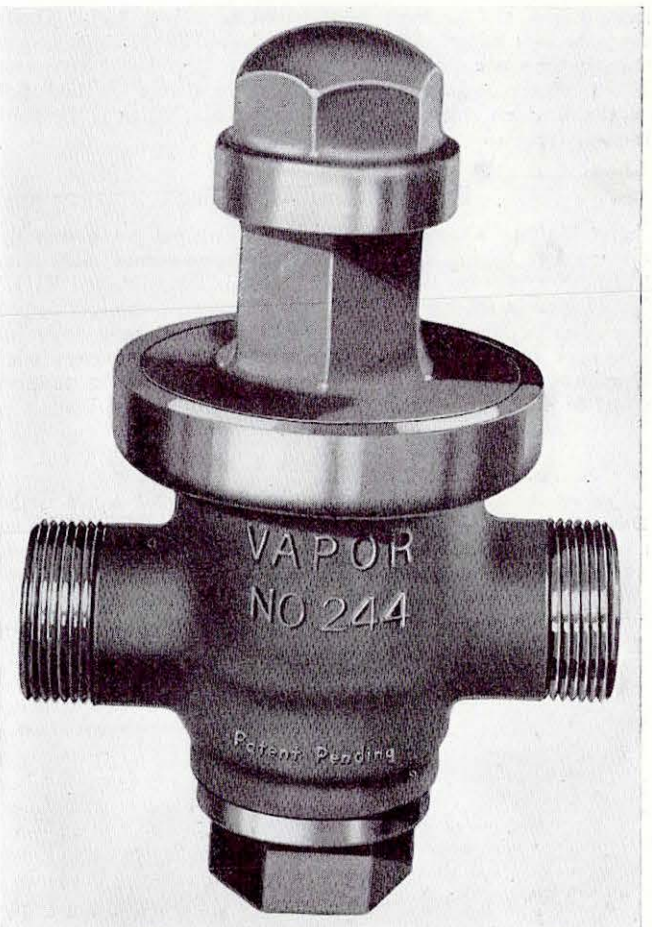
Car loadings in Canada for the week ended July 4 totaled 43,172, as against 39,835 for the corresponding week last year. This was a decrease also of 3,737 cars from the previous week, as recorded by the Dominion Bureau of Statistics.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
July 4, 1936	43,172	22,577
June 27, 1936	46,909	22,601
June 20, 1936	45,740	22,172
July 6, 1935	39,835	18,614
Cumulative Totals for Canada:		
July 4, 1936	1,168,998	633,951
July 6, 1935	1,153,820	599,021
July 7, 1934	1,134,761	620,877

Constant-Pressure Valve for Passenger Car Use

THE Vapor Car Heating Company, Chicago, has recently developed a constant-pressure valve designed for use between high-pressure steam train lines on passenger cars and Vapor regulators which supply steam to the heating system. The purpose of this constant pressure valve is to maintain a uniform delivery of steam through Vapor regulators regardless of train-line pressures.

It eliminates excessive blow and waste of steam at the regulators, speeds up the passage of steam to the rear of long trains, and reduces wire drawing and wear of Vapor regulator inlet valve parts and at the same time increases life of regulator diaphragms. Perhaps the most important function of this constant pressure valve is the fact that it prevents the necessity of readjusting the set screw of Vapor regulators to compensate for varying train-line pressures. In other words, passenger cars may be operated at either the head end or rear end of trains as desired without making any change in vapor regulator set screw adjustments.



Vapor No. 244 Valve for Use in Passenger Car Steam Heating Lines

The Vapor constant-pressure valve No. 244 once applied requires no further attention—it automatically delivers steam to the regulator at a maximum of approximately 40 lb.

The valve is furnished with inlet and outlet union connections and is thus easily applied in the supply pipe between steam train line and regulator.

Odds and Ends . . .

Railway Quadruplets

The much-discussed father of the quadruplets born in Passaic, N. J., recently, is a railroader, Emil Kasper, machinist helper in the Secaucus shops of the Erie.

Two Geese Halt a Train

A pair of geese, wandering from the New York state game farm at Delmar, stopped a West Shore freight train and were taken for a ride in the locomotive. The engineer said he saw the geese waddling down the track in front of his train. He stopped the train, scooped the geese under his arms and took them aboard. A game protector brought them back to the game farm.

Slight Error

In the building of a tunnel through Ho Hiang mountain in north China, the headings were driven from both ends. However, through miscalculation, the bores were 50 ft. apart at the point in the center of the mountain where they should have met. When officers looked for the engineer in charge, he had disappeared, which is not astonishing, since decapitation is the punishment for errors of this kind in China.

Engine Named After King

His Majesty King Edward VIII of England has graciously consented to having a Great Western engine named after him. Engine No. 6029 has therefore been named "King Edward VIII." This engine is the latest of the "King" class locomotives named after famous kings of England. It is among the most powerful passenger engines in the country and is of the four-cylinder type, weighs 136 tons ready for the run and has a tractive effort of 40,300 lb.

Dawn-to-Dusk Club

One of the most exclusive organizations in the world is the Dawn-to-Dusk Club, and it has the unusual quality of being absolutely closed to new members. It consists of some 70 railway officers and newspaper men who made the now historic nonstop run on the original Zephyr, from Denver to Chicago, 1,015 miles in 13 hr. 5 min., in 1934. Recently, a number of the members got together to speed the Advance Zephyrs on their initial 16-hr. runs between Denver and Chicago, and among the members absent, one was in Guatemala and one in Finland. One woman and one burro are also members of the exclusive organization. The woman was a reporter and the burro was the mascot.

Guns

Nathan Slack, machinist for the Chesapeake & Ohio at Handley, W. Va., claims the best collection of guns of any railroader. He has over 200 guns, some dating back 400 years and covering many historical periods.

Old Tie

Section Foreman T. F. Dillon, of Clift, W. Va., who works on the Bluestone branch of the Norfolk & Western, "recently retired an old railroad friend." Mr. Dillon removed from the track a yellow locust cross tie that he personally installed during the spring of 1903. Despite 33 years in use, the tie was still solid. It was replaced by a creosoted tie.

Unusual Purchase

As one of the biggest customers of other industries, the railroads spend millions of dollars annually for scores of all kinds of products used in their operation and maintenance. The Norfolk & Western recently made an unusual "buy" when it purchased more than two miles of gold tinsel cord. The material was used in binding several thousand copies of a booklet issued to advertise the railway's new, low-level lake type coal pier at Lambert Point (Norfolk) Va.

Millions of Pigeons Will Race in Britain

The pigeon racing season is on! From now until well into September the day and night skies above the British Isles will be alive with feathered racers. One railroad alone, the London, Midland & Scottish, will carry during the season, it is estimated, over 2,000,000 birds. So seriously is the sport of pigeon racing taken in Great Britain that a 72-page booklet has been issued for the convenience of the railroads and racing enthusiasts.

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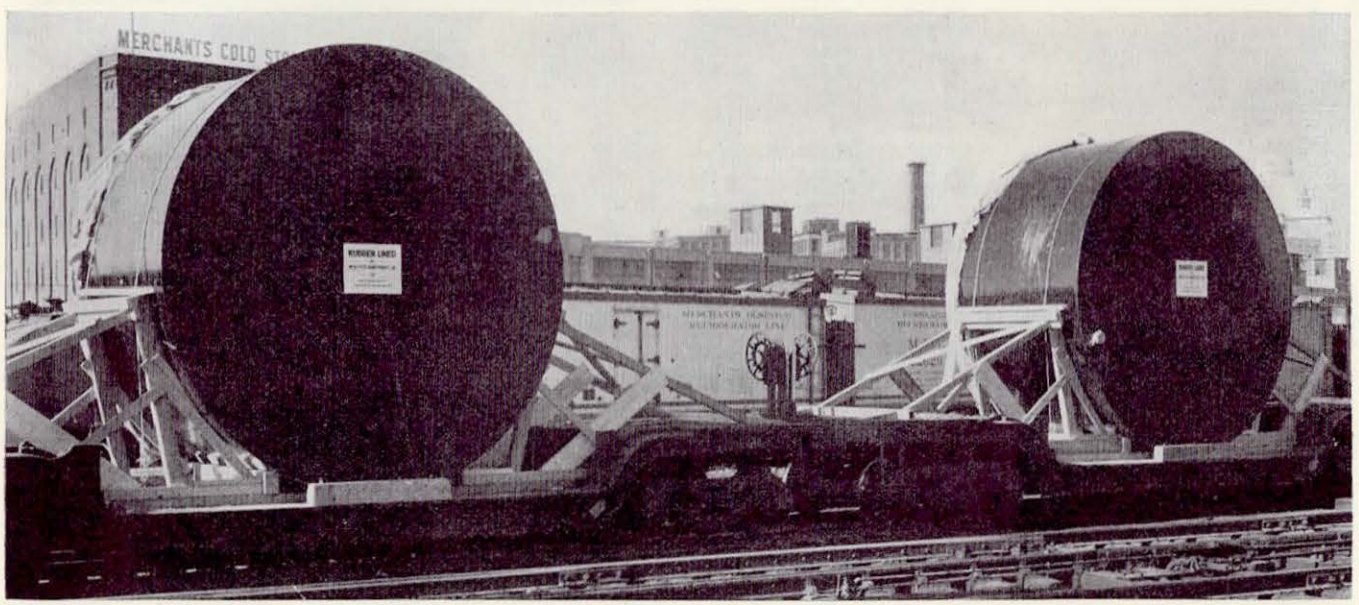

No, they are not huge bass drums. They are rubber lined tanks for storing phosphoric acid and were recently shipped from the Providence plant of the United States Rubber Company to Castleton, Vt., over the New York, New Haven & Hartford. These constituted the largest loads ever shipped out of Providence, being 16 ft. 3 in. in height. The tanks are 11 ft. deep and 14 ft. in diameter on the inside, weigh 11,000 lb. apiece and have 15,000 gal. capacity. Prior to the development of the rubber lining such tanks had to be constructed of glass or porcelain.

NEWS

Railroads Ask I. C. C. to Dismiss Power Reverse Gear Case

Safety to employees and the public would not be increased by compelling the railroads to install power reverse gear on virtually all locomotives, and the only result would be to place a heavier financial burden on the rail carriers at a time when they can least afford it, according to a brief filed by the Association of American Railroads asking the Interstate Commerce Commission to dismiss proceedings brought by the Brotherhood of Locomotive Engineers, and the Brotherhood of Locomotive Firemen and Enginemen to require the installation of power reverse gears as a substitute for hand operated gears.

Such an order, if promulgated by the commission, would require the installation of power reverse gears on more than 18,000 locomotives at a cost in excess of $7,000,000, according to the brief. Replying to contentions of the complainants that power reverse gears would bring about increased safety in the operation of locomotives, the brief said:

"Accidents to men in the locomotive cab involving movements of the lever are more common with hand gears than with power gears but such accidents are seldom severe and are, with negligible exceptions, if any, not the result of any fault or quality which can be remedied only by elimination of the hand gear. On the other hand, accidents to men working around locomotives, due to movements of the reverse gears, and accidents due to locomotives running into roundhouse walls and turntable pits, are more common with locomotives equipped with power gears. These accidents are often serious and are largely due to characteristics inherent in the power gear, that is: to the relatively great force which impels the moving parts of the gear; to the unexpected movements of the gear or engine caused by 'creeping' or 'settling' as a result of which the position of the lever in the cab does not correspond with the position of the valve gear; to the inability of the operator of the lever to feel an obstruction in the event a man is caught in the moving parts of the gear; to the inability to stop promptly the movement of the gear by operating the lever in the cab; and to the fact that a power reverse gear cannot be utilized as a braking device in the absence of suitable air pressure. None of these faults or disabilities are encountered with hand gears."

"Virtually all railroad expenditures have a direct bearing upon safety," the brief continued. "Every feature of railroad operation is related to safety and over-emphasis on one feature, with the resulting under-emphasis on others, is bound to affect adversely, rather than to promote, the safety of railroad operation as a whole. Thus, the installation of power gears should not be required unless the commission should find that it would serve an unmistakable and important purpose in promoting safety. The record furnishes no possible basis for such a finding. On the contrary, it clearly shows that considerations of safety are not involved."

This is the second time that this matter has been considered by the Interstate Commerce Commission. In 1930 the organizations of locomotive engineers and firemen instituted proceedings to have power reverse gears installed on all steam locomotives on the ground that the manually operated gears constituted an unnecessary peril to life and limb. The commission issued an order requiring this to be done, but a three-judge federal district court in Cleveland enjoined the commission from enforcing the order on the ground that it was arbitrary and that the commission had failed to consider fairly all of the pertinent and substantial facts. The United States Supreme Court affirmed the order of the lower court. In March, 1935, the engineers and firemen petitioned the commission to reopen the proceedings and to have further hearings. This petition was granted and the commission recently concluded hearings in the case.

Bower Becomes Commissioner of Port of New York Authority

Joseph A. Bower, director and executive vice-president of the Chemical Bank & Trust Company of New York, has been appointed by Governor Hoffman of New Jersey as a commissioner of the Port of New York Authority from that state. Mr. Bower succeeds John J. Quinn, who resigned recently to accept appointment as United States district attorney for New Jersey.

Santa Fe Organizes Highway Department

The Atchison, Topeka & Santa Fe has established a department of highway motor transportation within the railroad company's organization. H. R. Lake, superintendent of transportation, with headquarters at Chicago, has been promoted to general manager of the department, and H. G. Brandt, trainmaster at Wellington, Kan., has been appointed assistant to the general manager. The work of the new department involves the co-ordination of rail, bus and truck service of the railroad and its affiliated highway transportation companies.

Public Asked to Express Views on Air-Conditioning

The traveling public, beginning this week and continuing for the next few months, is to be asked to submit its views on the efficiency of the air-conditioning equipment now in use on passenger trains throughout this country, J. J. Pelley, president of the Association of American Railroads, has announced.

This is to be done in connection with the exhaustive research now being conducted by the Equipment Research Division of the Association of American Railroads in order to determine how well the various air-conditioning devices in use on passenger cars function under varying climatic and operating conditions, what might be done to improve their performance, and what standardization of such equipment can be developed in order to reduce costs of operation and maintenance.

Air conditioning engineers from 30 of the leading railroads have for the past few weeks been engaged in an intensive study of that subject at Ohio State University and elsewhere and, beginning this week, they will conduct a series of tests on trains throughout the United States in order to secure data as to the results being obtained from air conditioning of passenger cars.

In connection with those tests, there has been prepared a questionnaire which will be distributed to passengers by the research engineers. In that questionnaire, inquiry will be made as to whether, in the opinion of the passenger, the car or train is too warm or too cool; if it is "clammy," stuffy, drafty or noisy, or possibly too cool upon entering. Passengers will also be asked whether there are any objectionable odors, evidence of smoke when passing through the tunnels, excessive tobacco smoke, and, if occupying a berth in a sleeping car, whether it is too warm or too cool or is sufficiently ventilated. These questionnaires will be collected by the research engineers and the answers carefully tabulated. At the same time the answers will be compared with the analysis of air-conditions shown to have existed through scientific tests in that particular car or train on that day.

In order to make these tests, the research engineers have been equipped with small, especially designed kits about the size of an ordinary handbag, containing the most delicate and sensitive instruments that have yet been devised for this purpose. These instruments, among other things, will record and measure the slightest draft, one which can not be felt by the ordinary person; chart the humidity and temperature as they may vary in the car over a

24-hour period; detect the remotest trace of carbon dioxide in the car as well as count the bacteria in the air. Another will calculate the actual refrigeration, while still another will show the effect of the rays of the sun through the windows and against the curtains of the car.

The course of special study which these research engineers have been undergoing at Ohio State University has covered all phases of air-conditioning. It has been conducted by L. W. Wallace, Director of the Equipment Research of the Association of American Railroads, and by Professor A. I. Brown, of the Engineering School of that University, who is serving as a special consultant in this matter.

At the same time these road tests are being made a series of experiments by the Research Equipment Division as to air conditioning of passenger cars will be under way at Ohio State University, the Mt. Clare Shops of the Baltimore & Ohio, at Baltimore, and the Pullman-Standard Car & Manufacturing plant in Chicago. In those experiments, various types of air conditioning equipment will be put through exhaustive tests in order to ascertain what improvements can be made so as to insure the maintenance of proper temperatures under varying climatic conditions in passenger cars.

Anti-Consolidation Association Formed

The Missouri State Anti-Consolidation Association has been formed by the members of 21 standard railway brotherhood organizations in Missouri to oppose railroad consolidations. It has adopted resolutions calling upon Congress to oppose the merger of our railroads into a few systems and the consolidation of terminal and other railroad facilities. The Missouri General Assembly, in other resolutions, is asked to enact legislation to prohibit railroad consolidations.

Correction

Attention is directed to an error in Fig. 4 appearing in the abstract of the progress report of the Joint Rail Investigation, which was published in the *Railway Age* of July 4, page 26, with the title "Further Progress in the Study of Rails." This illustration shows two rails that had been subjected to the bend test, but owing to the fact that the view is bottom side up, the rails were not correctly identified in the caption. The rail that was subjected to the greater distortion before breaking is the one that was free from shatter cracks. The other one is the shatter-cracked rail.

Hiawatha June Business Up 50 Per Cent

Revenue passengers carried on the Hiawatha of the Chicago, Milwaukee, St. Paul & Pacific in June totaled approximately 50 per cent more than in June, 1935. On the northbound trips during that month the train carried 12,705 passengers and on the southbound trips 11,652, a total of 24,357 or an average of 812 paying passengers each day on the combined trips. A year ago in June, the train carried an average of 552 a day. Since the train was placed in service on May 29, 1935, to the end of June, 1936, it carried 260,205 paying passengers, an average of 652 a day.

Nearly One-Third of R.F.C. Railroad Loans Repaid

The monthly report of the Reconstruction Finance Corporation shows that as of June 30 it had authorized loans to railroads amounting to $615,053,795, of which $497,880,572 had been disbursed and $109,448,518 had been repaid. On July 13 the Southern Pacific made a payment on loans made to it and to the St. Louis Southwestern by the corporation which brings the total of repayments up to $144,000,000, or nearly one-third of the amounts loaned. In addition the R.F.C. has sold large amounts of securities it had purchased from the Public Works Administration representing loans to railroads.

Railroads Object to Truck Line Acquisition and Vice Versa

Eastern railroads have filed with the Interstate Commerce Commission a statement of objections against the granting of the application of the Keeshin Transcontinental Freight Lines, Inc., for authority to acquire control of the Seaboard Freight Lines, Inc.; and the Keeshin Motor Express Company, Inc., and the National Transfer & Storage Company have similarly filed objections to the granting of the application of the Union Pacific, the Chicago, Burlington & Quincy, and the Chicago & North Western for authority to acquire control of the Union Transfer Company.

Another Caterpillar Plague in Canada

Caterpillars that collect on the rails and destroy the traction of locomotives are again a source of trouble to the railroads in the territory immediately north of Lake Superior. There was much interference with train movements last summer. The plague has been much worse this year than last, but most of the difficulties have been overcome. After indifferent success with air blowers set close to the rails in front of the leading drivers, blowers delivering steam at boiler pressure have proved so effective that they have been applied to practically all freight locomotives. Trouble with slipping drivers is now confined to the sharper curves where the steam jet is deflected off the rail.

As an illustration of the difficulties encountered where a locomotive is not equipped with the blowers, a small engine on a 30-mile branch line extending southwest from Fort William was unable to develop enough traction to haul one car on a steep grade. The difficulty has passed its worst phase for the present year, as the pest is now entering the moth stage.

I.C.C. Finds Motor Carriers Giving Free Transportation

The Interstate Commerce Commission's Bureau of Motor Carriers has issued a notice stating that it has been informed that many motor carriers of passengers are issuing passes and giving free transportation in violation of the provisions of the motor carrier act, 1935, and of the interstate commerce act. The notice says it is probable that this type of violation is largely due to lack of information on the part of such carriers that such conduct is now prohibited by the applicable law but the carriers are warned to read the provisions of the law carefully, and refrain in the future from any conduct which will be contrary to the provisions thereof. Suitable rules and regulations concerning the interchange of passes for the officers, agents and employees of such common carriers, and related matters, will be prepared and issued by the commission at the earliest practicable time.

P. R. R. Streamlined Locomotive on Exhibition

The Pennsylvania is now exhibiting a new 4-6-2 streamlined high-speed steam locomotive at a number of cities in the Eastern Region. The locomotive, which was built at the Altoona, Pa., works of the company, was designed after an extensive series of wind tunnel tests in the aerodynamic laboratory of New York University. It has 80 in. drivers and the total weight in working order of the engine and tender is 627,500 lb.

The railroad officers have been astounded at the large crowds of people who visit the locomotive. Below are the attendance figures compared to the 1930 population statistics for the cities visited. They speak for themselves!

Date	City	Population 1930	Visitors to Locomotive
June 19	Altoona, Pa.	82,054	6,792
June 29	Reading, Pa.	111,171	10,331
June 30	Pottsville, Pa.	24,300	7,261
July 1	Wilkes Barre, Pa.	86,626	10,760
July 2	Sunbury, Pa.	15,626	8,738
July 3	Williamsport, Pa.	45,729	11,631
July 6	Elmira, N. Y.	47,397	8,219
July 7	Lock Haven, Pa.	9,668	5,368
July 8	Renova, Pa.	3,947	4,026
July 9	Lancaster, Pa.	59,949	18,340
July 10	York, Pa.	55,254	10,196
	Total	541,721	101,662

New Haven Finds Passenger-Revenue Rise Retarded by Fare Cuts

Trustees of the New York, New Haven & Hartford on July 16 issued a statement saying that from June experience on that road the "essential effect of the reduced passenger fares has been a sharp retardation of the previous rising monthly revenue from passenger traffic."

In June, 1935, partly estimated but close to the actual, the statement continues, passenger revenues increased 1.4 per cent over a year ago, whereas in May, 1936, it was 10.2 per cent more than May, 1935; and for the first five months of this year it was 10 per cent over the corresponding period in 1935. Assuming that the percentage of increase in passenger travel during June would have been as great as for the first five months of 1936, the trustees estimate the loss in passenger revenue for June, due to change in passenger fares, to be approximately $150,000. They are, however, "glad to note that this loss in the first month of experience with the new fares is substantially less than anticipated."

Including all classes of travelers, the number of New Haven passengers in June, 1936, increased 8.9 per cent and passengers carried one mile 16.3 per cent as compared to June, 1935. Excluding commutation and "similar low-fare travel," the number of passengers carried increased 56 per cent,

with an increase of 32 per cent in passengers carried one mile. Available information for June, 1936, shows a shift from multiple-trip and zone tickets to regular coach tickets due to the new coach fares in many cases being lower. No information is available yet as to the shift in riding from Pullman to coach.

Car Service Division Circular on Auto Loaders

The Car Service division of the Association of American Railroads has issued a circular urging that each railroad take steps to insure the complete observance of instructions for the operation and stowing of Evans automobile loading devices in box cars. The circular was prepared following a recent meeting of the Joint Sub-Committee on Auto Loading Devices of the Mechanical, Transportation and Car Service divisions. It calls attention to the "very important" instruction that, when the car is made empty, unloaders must raise both racks toward the roof until the hanger hooks engage and never leave the racks on the freight car floor or suspended loose in the car.

Failure to observe this rule has caused serious damage to loaders and each railroad is therefore urged to issue positive instructions to its station agents and other employees having supervision over the unloading of auto cars, as will insure complete observance of the printed instructions in the cars. Also, the circular asks that car inspectors, agents and trainmen be instructed to ascertain that the device is in proper position before an empty car is moved.

British Summer Timetables Bring Many Accelerations

The new summer timetables in Great Britain, which became effective on July 6, include many new trains and accelerations which reduce running times of trains previously operated in some instances by more than an hour. These summer train services represent an additional 57,000 train miles per week as compared with last year.

On the Great Western 1,056 new trains and additional sections of existing trains are being operated on weekdays and Sundays. The "Cornish Riviera Limited" now operates out of London on Saturdays in three sections—one going to Falmouth, the second to Penzance and the third to the principal Cornish stations. This road's services between London and Birmingham and the North Wales and Cambrian resorts have been improved by expedited schedules involving savings in time up to 65 minutes. Also, its streamlined rail cars are now run 2,104 miles daily in excess of the daily mileage operated by such units last summer.

On the London, Midland & Scottish 560 trains have been accelerated by 1,689 minutes per day, thus bringing the total number of L. M. S. trains which have been speeded up during the past year to 1,528, with an aggregate saving in time of 4,350 minutes per day. The principal accelerations include that of the "Royal Scot," which now covers the 401.5 miles between London and Glasgow in 7 hr. 30 min. including a non-stop run of 301 miles. Local passenger trains have also been speeded up by this road on 45 routes, while several "cross-country" services have been installed on week ends for the accommodation of vacationists.

The weekly mileage of passenger trains on the London & North Eastern has been increased by 14,005 miles as compared with last year. The "Flying Scotsman" covers the 392.25 miles between London and Edinburgh in 7 hr. 15 min., non-stop. Various other services to Scotland and between other points have also been accelerated.

On the Southern the running times between London and North Devon have been reduced as well as those of this road's West of England trains. Also its "cross-country" and "coastal" services between Sussex and the West of England have been improved, while schedules on many of its branch lines have been readjusted to bring about a daily saving of 2,012 minutes.

Reduced Rail Fares Cause Second Cut in Bus Fares

Although bus lines generally made reductions in their passenger fares on June 1 to meet the reduction in railroad passenger fares ordered by the Interstate Commerce Commission, some of those operating between New York, Philadelphia, Baltimore, and Washington have found it necessary to make further reductions. Under special permission orders issued by the Interstate Commerce Commission to file tariffs on ten days' notice several bus companies have published rates between New York and Philadelphia, Baltimore, and Washington of $1.25, $2.85 and $3.50, respectively, as compared with rates of $1.50, $3.10, and $3.75 put into effect on June 1 and other reductions have also been made in the same general territory.

The Short Line explained to the commission that the new fares were necessary because there was no longer a sufficient spread between the railroad and bus fares on New York-Washington routes to offset the faster rail schedules. The Quaker City Bus Company, Philadelphia, reported that in the first 15 days of June its number of passengers was reduced by 50 per cent. The Nevin Transit Inc., of New York, made a similar report, and C. A. Langner, president of the Short Line, in his application to the commission, pointed out that the New York-Philadelphia territory has the finest and fastest railroad service in the world, with two to three times more service than all the competitive bus lines put together.

Canadian National Celebration

To commemorate two historical events, the operation of the first steam passenger railway in Canada, and the completion of certain experiments of Samuel F. B. Morse with his epoch-making telegraph, looking to the establishing of a system of instantaneous long distance communication, the Canadian National, on July 21, will set up a wire circuit across Canada, from the Atlantic to the Pacific; and numbers of old time Morse operators will sit in for an hour and "reminisce" on this nation-wide hook-up. Old instruments of types now obsolete, old tape machines and even old tables, have been brought out of storage and dusted off, and will be placed in service again at 8 p.m., Eastern Standard time, on that date.

On July 21, 1836, the first steam-drawn passenger train began operation on the Champlain & St. Lawrence, between Montreal and St. Johns, and in the same year Morse completed (at New York) the most essential of his experiments which led later to the introduction of the telegraph as a commercial venture in America.

The originators of the Champlain & St. Lawrence began about 1827 to carry out their idea, but were several years in getting a start. The charter was granted in 1832 and was amended in 1834. The primary purpose was to develop the route from Montreal southward to New York, already in existence, as a stage coach and water route, by way of Lake Champlain and the Hudson River. The start of the railroad was from Laprairie, eight miles upstream from Montreal, and the track extended southeastward to St. Johns, Que. In 1850, the line was completely rebuilt and extended at both ends; southward to Rouses Point, N. Y., and northeastward to St. Lambert, on the south side of the St. Lawrence, opposite Montreal.

The road came into the Grand Trunk System—now the Canadian National System—in 1863.

N. I. T. League Warns Members

The present formative period in the application of the federal motor carrier act is one in which shippers generally would do well to "watch their step," according to a warning issued by The National Industrial Traffic League in a letter sent to members by L. F. Orr, chairman of its highway transportation committee, and E. F. Lacey, executive secretary. The League points out that the law requires common carrier motor vehicle operators engaged in interstate commerce to file their rates with the Interstate Commerce Commission and that, once the rates have been so filed, they are the only rates the operator may legally charge. Further, the league points out, any deviation from that rate accepted by the shipper makes the shipper and carrier equally liable to penalties of $500 for the first offense and $2,000 each for subsequent offenses.

It has been more or less the custom heretofore for individual shippers to make whatever rate arrangements they could to their own advantage with common carrier motor operators. According to advices received by the League the practice has not been entirely abandoned. Negotiations with truck operators for the purpose of obtaining concessions in rates, the League points out, may be poor economy in view of the fact that a few dollars' advantage in hauling charges may bring about heavy fines.

A second subject concerned with motor transport to which the League and its highway transportation committee has been giving much attention is the practice on the part of some motor carriers and their tariff bureaus of making a charge for copies of their tariffs. A committee of the League, after studying the situation, reports that the practice is quite prevalent

but that it has no justification. The railroads have always given tariffs free to bona fide shippers, even though the Interstate Commerce Commission once ruled that a charge might be assessed. The committee recommended that the League take the matter up with the American Trucking Associations, Inc., in an effort to prevail upon members of that organization not to make a charge for their rate documents. Failing in that effort, the committee recommended that the matter be taken to the Commission for a ruling on the subject.

Credit Period for Truck Charges Reduced

The Interstate Commerce Commission, Division 5, on July 8, amended its order of March 17, so as to authorize the extension of credit in the collection of rates and charges of motor carriers due and owing at the time of delivery or relinquishment of property at destination for a maximum period of 15 days instead of 30 days as formerly authorized. This action was taken as the result of many complaints that the maximum credit period of 30 days was too great and not in the public interest.

Attention was again directed to the fact that common carriers are not required to extend credit. If credit is extended, the carrier must take precautions necessary to assure payment of the freight charges during the credit period, such as obtaining surety bonds and examination of shipper's credit rating. If credit is extended by a carrier to any receiver of property transported, it must extend credit for the same period of time to all other receivers of property who have a similar credit standing or who give similar assurance that the transportation charges will be paid during the credit period.

Division 5 of the commission has ordered an investigation to determine rules and regulations to govern the extension of credit by motor carriers which has been referred to W. A. Hill, chief of the section of complaints of the Bureau of Motor Carriers and assigned for hearing before Mr. Hill at various cities throughout the country.

Passenger Revenues Increase Less Than Freight Revenues

The Interstate Commerce Commission on July 10 made public a preliminary statement of estimated operating revenues of 64 railroads for the month of June which showed for 27 eastern roads an increase of 5.9 per cent in passenger revenues for the first month in which the reduced fares were in effect, as compared with the figures for June, 1935. Two roads in the Pocahontas region also showed an increase of 9.2 per cent. Still larger increases were reported in the western and southern districts where the even greater reductions in fares had been put into effect before the commission's order. Fifteen southern roads reported an increase of 15.5 per cent in passenger revenues and 20 western roads reported an increase of 19.6 per cent. Eastern and western roads also showed greater increases in freight revenues than in passenger revenues. For the first four months of 1936, before the fares were reduced in the East, passenger revenues for the United States were 12.9 per cent greater than in the corresponding period of last year, while freight revenues showed an increase of 14.3 per cent.

The following table, issued by the commission's Bureau of Statistics, is based on 64 reports of estimated revenues of Class I steam railways received up to 3 P.M., July 9, 1936:

Region and district	Freight	Passenger	Total
Eastern district: (27 reports represented)			
June, 1936, estimated	$96,596,395	$14,026,297	$120,897,751
June, 1935, actual	84,523,358	13,240,700	107,061,573
Per cent of increase	14.3	5.9	12.9
Pocahontas region: (2 reports represented)			
June, 1936, estimated	11,227,287	297,474	12,007,246
June, 1935, actual	10,911,137	272,306	11,620,085
Per cent of increase	2.9	9.2	3.3
Southern region: (15 reports represented)			
June, 1936, estimated	18,408,823	1,974,741	22,031,205
June, 1935, actual	16,069,879	1,709,231	19,374,027
Per cent of increase	14.6	15.5	13.7
Western district: (20 reports represented)			
June, 1936, estimated	32,640,979	3,931,957	40,345,831
June, 1935, actual	25,452,072	3,286,510	32,352,911
Per cent of increase	28.2	19.6	24.7

NOTE:—The above tabulation is made from estimates voluntarily submitted by carriers in advance of regular sworn reports which are due on July 26. A more complete estimate will be available July 16. The advance estimates of individual railways are not made public. A total for the regions and districts is omitted in this statement because the total for the Eastern district is more nearly complete than are those for the other districts.

Canada Launches Relief Program Involving Work on Railways

The policy of the Canadian Government to close the relief camps throughout Canada has been brought to a successful conclusion, carrying out the recommendations of the special committee appointed to report on conditions in the camps, according to a statement recently issued at Ottawa by Hon. Norman Rogers, Minister of Labor.

Included in the program, as pointed out in the *Railway Age* of June 20, is an agreement entered into with Canadian railways whereby the latter undertook to absorb approximately 10,000 men in special extra gang labor on deferred track maintenance work, the work being in addition to that being normally carried out by the railways during the summer months. In this connection the government has been assured the railways also have more men actually engaged at work on their normal summer program than at this time last year.

On March 1, 1936, on the commencement of demobilization, there were in camp 20,376 men distributed throughout Canada in 163 projects. Since that date there has been a progressive decrease. To facilitate the movement of the men, transportation was provided at the government's expense to enable each man to reach the place of his employment.

In addition to the 10,000 trackmen, it is estimated that approximately 2,000 more men have been engaged by the railways in various supervisory capacities and in train service in connection with the work, making a total of 12,000 men. It has been found that the requirements of the railways for men have exhausted the supply available on camp strength, and men are now being drawn from the localities in which the work is being carried out.

Long Island Installs Two-Cent Coach Rate for Intrastate Service

The two-cents-per-mile coach rate will be available to all Long Island passengers after midnight, July 18, as a result of the July 13 decision of the New York Supreme Court, Albany County, denying the railroad's motion to stay the operation of the New York Public Service Commission's recent order directing the filing of intrastate schedules on the same bases as those prescribed for interstate service in the Interstate Commerce Commission's order which became effective June 1. While complying with this I.C.C. order the Long Island has been charging intrastate travelers three cents per mile.

The Public Service Commission order applies to Long Island territory outside New York City, but the two-cent rate has become effective within that municipality also as a result of last week's decision of the New York Court of Appeals affirming a New York Supreme Court injunction which had been obtained by the New York Transit Commission (having regulatory jurisdiction in New York City) to restrain the Long Island from charging intracity passengers more than two cents a mile. This injunction granted to the Transit Commission is based on Section 57a of the New York railroad law, which prohibits a railroad operating within New York City, and owned by another carrier, from charging a higher rate for passenger service within that city than the parent railroad charges outside. The Pennsylvania's two-cents-per-mile coach rate brings the Long Island within the provisions of this law, which New York's highest court upheld, rejecting the Long Island's allegations of unconstitutionality.

The Long Island may still prosecute in New York courts its appeal from the Public Service Commission order, and its statement on the filing of the two-cent tariffs includes the further announcement that the order will be brought up for review before the Appellate Division of the Supreme Court "at the earliest possible date."

Continuing, this statement says that "unlike other major railroads the Long Island is dependent upon its passenger traffic for over 70 per cent of the revenues necessary to enable it to provide service, pay its taxes and the interest on its bonds held by the public.

"In 1935 its revenues failed by nearly $1,500,000 to meet its operating expenses, taxes and interest. This deficit would be no more than met by the increased commutation fares which the company is now seeking to establish. The reduction of its

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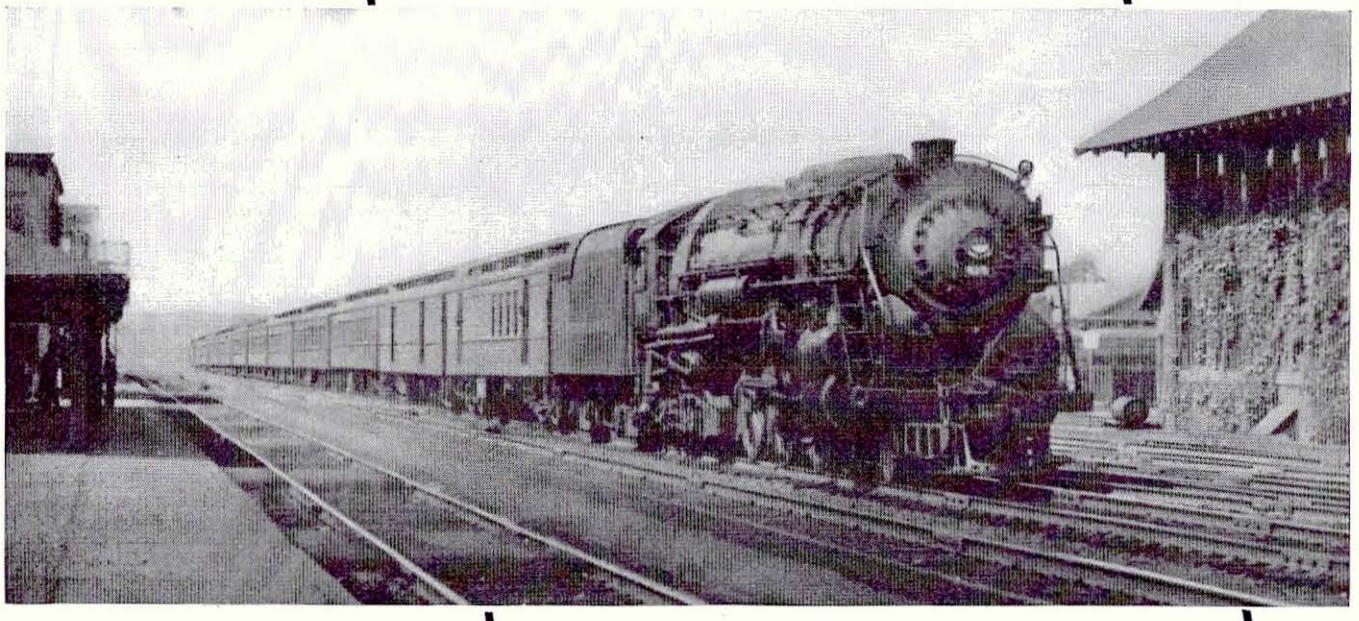
MONEY MAKERS

Net tons per mile of road per day measures the effectiveness of the transportation plant. » » » Modern power increases the gross ton-miles per train hour at least 25 to 30% as compared with locomotives built ten or more years ago. » » » Today's locomotives are economical to operate and to maintain. They increase the earning capacity of the entire railroad. That is why modern locomotives are money makers.

LIMA LOCOMOTIVE WORKS INCORPORATED



LIMA LOCOMOTIVE WORKS, INCORPORATED, LIMA, OHIO

fares from non-commutation business to three cents per mile in Pullmans and two cents per mile in coaches, involves a reduction in its revenues of approximately $1,700,000 per year, based upon its 1935 volume of business. It sees no prospect of securing sufficient additional traffic at the reduced fares to offset this reduction.

"The company has taken such steps as were available to it in an effort to maintain its fares upon the basis which it has felt would best produce the revenues it needs. In pursuing this course it has been mindful of the necessity of securing adequate revenue from its non-commuter traffic so that it may continue to provide satisfactory service and so that the commuters need not be called upon to sustain a heavier burden."

Mid-West Board Meeting

Commodity committee reports submitted at the fortieth regular meeting of the Mid-West Shippers Advisory Board at Green Bay, Wis., on July 9, forecast an increase of 10.9 per cent in carloadings for the third quarter of 1936, as compared with the same quarter last year. Anticipated shipments are expected to total 726,192 carloads, compared with 654,803 cars actually loaded in the same quarter of 1935.

The program included an address by J. M. Symes, vice-president of the Association of American Railroads, and a luncheon at which Ernest Mahler, vice-president, Kimberly Clark & Company, Neenah, Wis., spoke on the paper industry. About 250 shippers and railroad representatives were in attendance. The next meeting will be held in Rockford, Ill., on October 8.

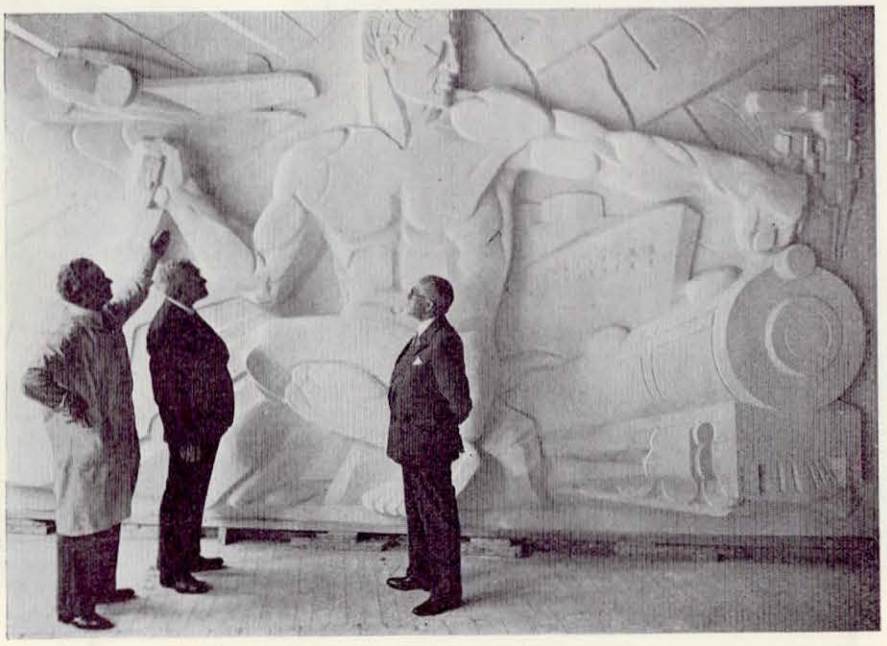
Mr. Symes described the efforts being made by the railroads to secure and hold traffic by developing modern equipment and speeding up service and discussed the freight car situation. "In the third quarter of this year," he said, "it is expected that the carloadings of the country will show about 11 per cent increase. This means that we can expect carloadings of around 780,000 cars in certain weeks during this period. If improved loadings continue during the fourth quarter to the same degree as in the third quarter, and there is every reason at this time to feel that way, we can expect carloadings in certain weeks to approach the 800,000 mark.

"How are we going to take care of this situation? On June 1 of this year the railroads owned 1,776,000 freight cars, of which 776,000 are box cars. Of this number there were awaiting repairs 260,000 cars, of which 81,000 are box cars. This means that there are 1,576,000 cars available for service, of which 695,000 are box cars. I am calling particular attention to box cars because I believe the situation will be tighter with this class of equipment than any other. In October, 1929, for every 1,000 serviceable cars owned, the railroads secured 550 loads per week; for every 1,000 serviceable box cars owned they secured 659 loads per week. Applying these ratios to our present serviceable car supply means that we have a potential capacity of 834,000 cars per week, including 458,000 box cars.

This does not take into consideration increased efficiency in the way of faster train speeds, quicker terminal handling, use of containers in lieu of box cars for handling merchandise freight, and other improvements that, in my opinion, can be conservatively estimated to increase car utility as compared with 1929 at least 10 per cent. Also, additional cars can be made available on rather short notice by a reduction in the "bad order" situation. New freight cars on order on June 1 totaled 25,000, which is more than half of the number placed in service during the last five years. All in all, I think that in so far as the general car supply is concerned the railroads will continue, as they have during the past 15 years, to be ahead of the demands."

Mr. Mahler spoke of the importance of the United States paper industry and the relation of a dependable transportation system to it. "In 1935," he said, "paper mills in the United States produced more than 10,307,000 tons of paper, or 515,350 carloads. Since three cars are shipped into the mills for each one shipped out, a total of 1,546,050 carloads were shipped into the mills, thus placing the total number of carloads for the industry over 2,000,000. With Canadian shipments the total exceeds 3,300,000 carloads annually."

* * * *



Panels for George Westinghouse Bridge

The first of the panels to be cut into the entrance pylons of the George Westinghouse Bridge, on the Lincoln Highway, at East Pittsburgh, Pa., has been completed in clay in the studios of sculptor Frank Vittor. "Transportation" is the theme of the first model which is shown above being viewed by Mr. Vittor (left), A. L. Humphrey, chairman of the Westinghouse Airbrake Company (center), and F. A. Merrick, president of the Westinghouse Electric & Manufacturing Company (right). The sculptures will be cut in eight inch relief in solid Vermont granite, 18 ft. above the floor of the bridge. Each panel will be 18 ft. long and 10 ft. high. Other panels will depict "Steel," "Electricity" and "Pioneers."

Equipment and Supplies

LOCOMOTIVES

THE UNION PACIFIC has ordered a 3,600-hp. Diesel-electric locomotive from the Electro-Motive Corporation, for use as a reserve power plant for streamlined trains.

FREIGHT CARS

THE LEHIGH & NEW ENGLAND is inquiring for six caboose cars.

THE PITTSBURGH & LAKE ERIE has requested prices on the rebuilding of 1,000 hopper cars.

THE ALUMINUM ORE COMPANY, subsidiary of the Aluminum Company of America, has ordered 50 covered hopper cars of 70 tons' capacity from the Pullman-Standard Car Manufacturing Company. These cars are to be used for transporting alumina, or aluminum oxide. Inquiry for this equipment was reported in the *Railway Age* of February 8.

THE ATCHISON, TOPEKA & SANTA FE has ordered 10 covered type hopper cars, from the American Car & Foundry Company.

PASSENGER CARS

THE SEABOARD AIR LINE has ordered six coaches and four combination passenger and baggage cars from the Pullman-Standard Car Manufacturing Company.

IRON & STEEL

NEW YORK, NEW HAVEN & HARTFORD.—A contract has been given to the Phoenix Bridge Company for 700 tons of steel to replace two spans of the Turners Falls, Mass., bridge of this road.

BOSTON & MAINE.—A contract for 700 tons of steel to replace three spans of the White River Junction, Vt., bridge of this company has been let to the Phoenix Bridge Company.

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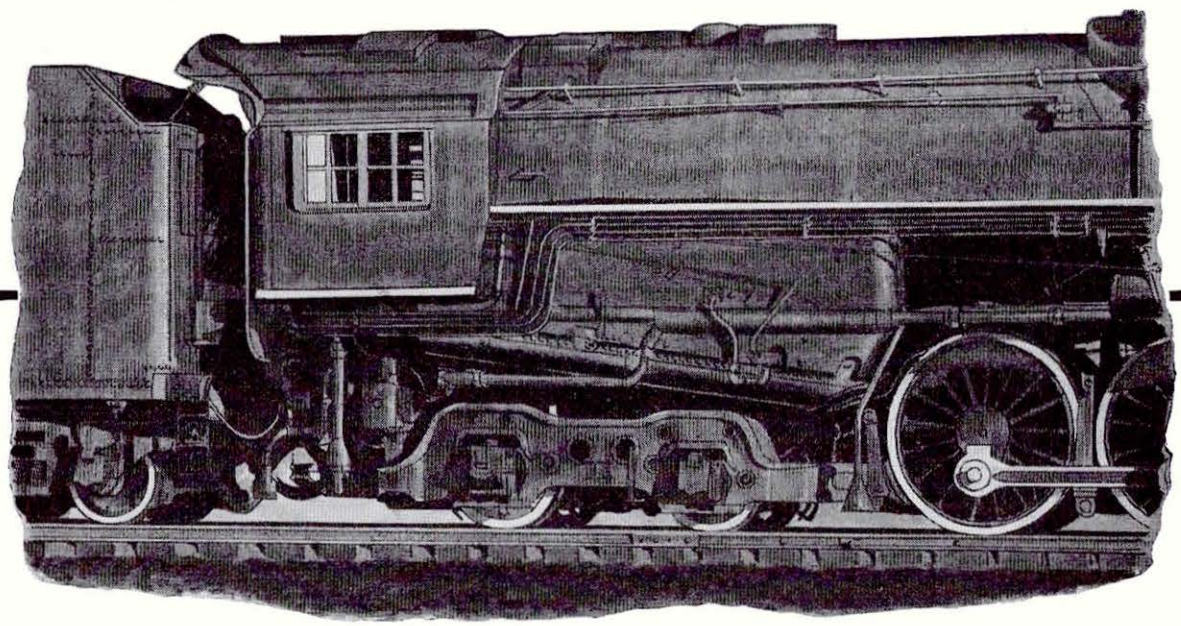
COSTS Reduced . . .



WITH THE LOCOMOTIVE BOOSTER

Starting a capacity train always imposes an overload on the engine. During these few minutes of overload, the excessive piston thrust overstresses rods, pins, frame and every other part of the motion work. This causes rapid wear, misalignment and high maintenance.

The Locomotive Booster, because of the added tractive effort it brings, relieves the main cylinders and eliminates the cause of high maintenance.

Whatever the service, The Locomotive Booster permits the use of lighter power without any sacrifice in locomotive capacity and results in a material reduction in maintenance and operating costs.

Booster Repair Parts made by the jigs and fixtures that produced the original are your best guarantee of satisfactory performance.

FRANKLIN RAILWAY SUPPLY COMPANY, INC.

NEW YORK CHICAGO MONTREAL

Supply Trade

The R and C Company, 1218 Olive street, St. Louis, Mo., has been appointed to represent in that region the **Graham-White Sander Corporation,** Roanoke, Va.

William H. Phillips, formerly representative of the Harry Pratt Company, Chicago, has been appointed power plant specialist for the **Worthington Pump and Machinery Corporation,** with headquarters at Chicago.

J. C. Bloomfield, formerly with the Industrial Brownhoist Corporation, and the Harnishfeger Corporation, has been appointed sales representative of the **Link Belt Company,** Chicago, and will be in charge of the sale of shovels, draglines, and cranes to railroads.

The General Refractories Company, Philadelphia, Pa., has moved its general offices into new quarters in the Real Estate Trust building at Broad and Chestnut streets, Philadelphia, instead of at Broad and Market streets, as previously reported in the *Railway Age* of July 4, page 42.

The Standard Stoker Company, Inc., has reorganized its engineering staff with headquarters at Erie, Pa., as follows: **C. R. Davison** is now mechanical engineer and **E. F. Seibel** is chief draftsman. This department was formerly headed by the late H. P. Anderson, chief engineer.

J. L. Praytor has been appointed district manager of the **American Hoist & Derrick Company,** St. Paul, Minn., to cover the south and southeastern section of the country, including Alabama, North and South Carolina, Georgia, Florida, Tennessee, Kentucky and Mississippi, with headquarters at 4601 First avenue, No., Birmingham, Ala.

The trustees' plan for reorganization of the **Pressed Steel Car Company** under section 77-B of the bankruptcy act was approved by Federal Judge R. M. Gibson at Pittsburgh, Pa., on July 8. The plan enables the **General American Transportation Company** of Chicago to acquire control of the company through the purchase of stock.

Wallace W. Smith, assistant to the vice-president in charge of sales of shapes, plates and steel piling, of the **Inland Steel Company,** Chicago, has been promoted to assistant vice-president in charge of the sale of structural shapes, plates, floor plates and steel sheet piling, and **Maurice E. O'Brien,** sales representative, has been promoted to manager of sales, carbon steel bars and billets, and will also have charge of sales to manufacturers of agricultural implements.

The Globe Steel Tubes Co., Milwaukee, Wis., has opened a new sales office at 1478 Starks building, Louisville, Ky., in charge of **W. H. Buley,** former sales supervisor in Milwaukee. **C. J. Bickler,** sales engineer at Milwaukee, has been appointed manager of sales of the Cleveland district, with office in the Terminal Tower building, Cleveland, Ohio. **C. D. Haven,** formerly connected with the Chicago office, is associated with Mr. Bickler.

John A. Miller, chairman of the board of the **Pennsylvania-Dixie Cement Corporation,** New York, has been elected president, to succeed **Blaine S. Smith,** resigned, and has been succeeded by **Victor N. Roadstrum,** a director. **George Kilian,** who has been acting as secretary and treasurer, has been appointed also assistant to the president. **Walter S. Wing,** general sales manager, and **W. H. Klein,** general operating manager, have been elected also vice-presidents and members of the board.

The Milcor Steel Company, Milwaukee, Wis., has been consolidated with **The Inland Steel Company,** Chicago, effective July 1, following the purchase of all of the outstanding stock of the Milcor Company for 59,000 shares of the capital stock of Inland. No changes will be made in the management or operations of the Milcor Company. The present officers will continue to operate the company as a unit. The Milcor Company, manufacturers of sheet metal building products, has plants at Milwaukee and Canton, Ohio, and warehouses at Chicago, Kansas City, Mo., and LaCrosse, Wis.

The newly formed **Colorado Fuel & Iron Corporation** has taken over the assets of the Colorado Fuel & Iron Company, under a court order of Federal Judge J. Foster Symes. The Colorado Fuel & Iron Company had been in the hands of a receiver and trustee since August, 1933, the approval of its reorganization plan was confirmed by formal court order on April 26. The officers of the new corporation are: **Arthur Roeder,** president; **S. G. Pierson,** vice-president and treasurer; **W. A. Maxwell, Jr., N. H. Orr,** and **Thomas Aurelius,** vice-presidents; **D. C. McGrew,** secretary; **H. C. Crout,** assistant treasurer; **Harry P. Fish,** assistant secretary; **Terrell C. Drinkwater,** assistant secretary; **Fred Farrar,** general counsel; **W. B. Montgomery,** controller; and **J. A. Bullington,** assistant controller.

Benjamin F. Affleck, who will retire as president of the **Universal Atlas Cement Company,** a subsidiary of the United States Steel Corporation, with headquarters in Chicago, on September 1 under the Steel Corporation's pension plan to devote his time to private interests, was born on March 1, 1869, at Belleville, Ill., and started his career at the age of 14, working for several years as a machinist, a stenographer and a clerk with various concerns. In 1896 he began as stenographer for the Illinois Steel Company (now the Carnegie-Illinois Steel Corporation), and in 1901 became branch manager of that company's cement department at St. Louis. In 1906, when this department became a subsidiary of the United States Steel Corporation, Mr. Affleck became general sales manager. In 1915 he was elected president. He was one of the early members of the Portland Cement Association and was largely instrumental in reorganizing it in 1916, following which he served as its president for five years. Mr. Affleck has also been active in the civic life of Chi-

Benjamin F. Affleck

cago, having served as president of the Union League Club, the Chicago Engineers Club and other organizations.

Blaine S. Smith, who has resigned as president of the **Pennsylvania-Dixie Cement Corporation,** with headquarters at New York, to succeed Mr. Affleck, was formerly connected with the Universal Atlas Cement Company. Following ten years' service in the traffic department of the Chicago & North Western, he entered the employ of the Universal Atlas Cement Company in 1908 as a salesman and advanced through various positions to that of general sales manager in 1915, succeeding

Moffett

Blaine S. Smith

Mr. Affleck. In 1926 Mr. Smith was elected vice-president, from which position he resigned in 1928 to become president of the Pennsylvania-Dixie Cement Corporation. Mr. Smith has been active for many years in the Portland Cement Association, serving as president in 1925 and 1926. He was also president of the Cement Institute in 1929 and 1930, and is now a member of the board of both organizations.

OBITUARY

George Sykes, assistant to the president of the Baldwin Locomotive Works, died in Media (Pa.) Hospital on July 10, from injuries received the previous day when he was thrown from the back of his

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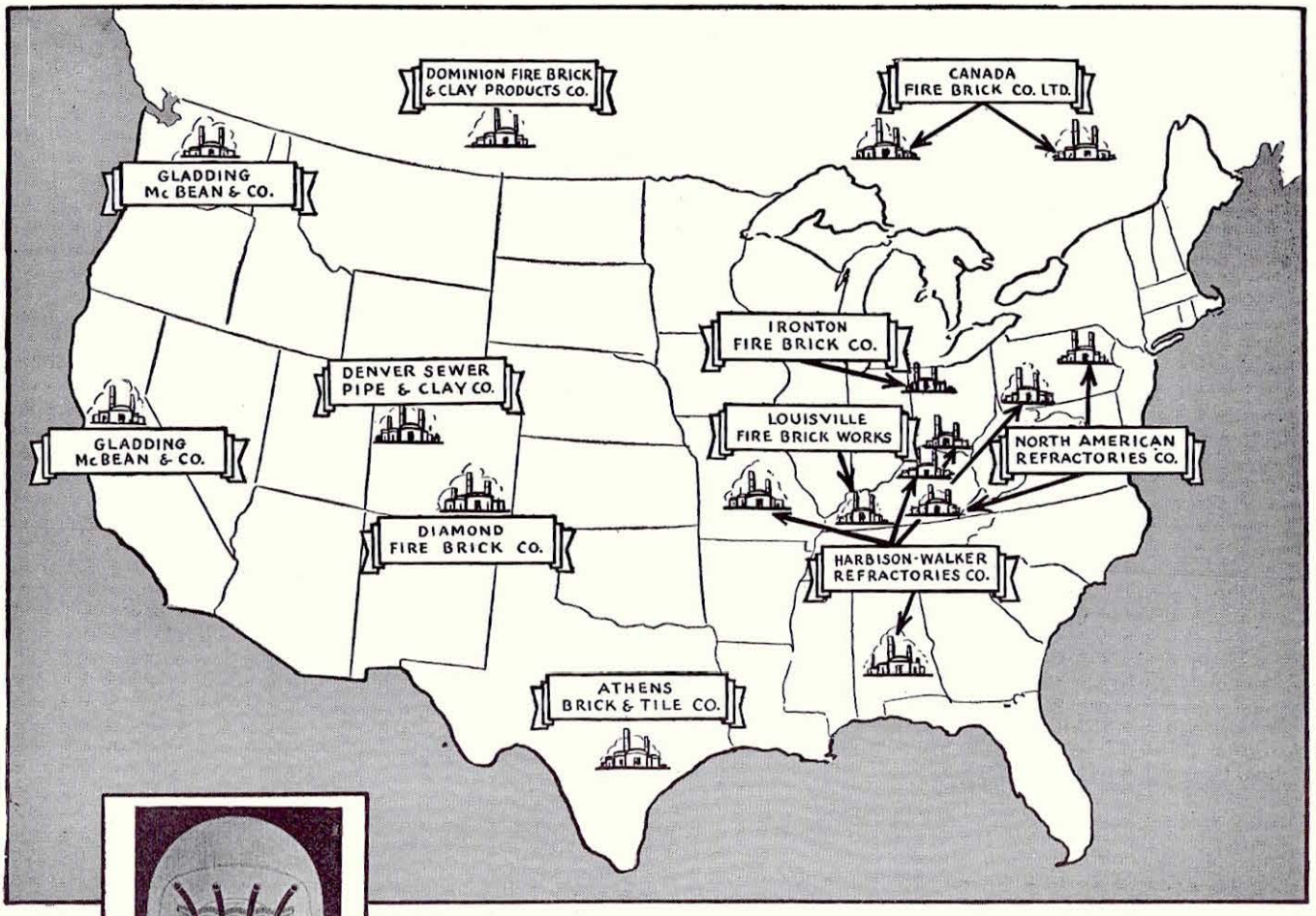
Equipped TO SERVE YOU!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CANADA FIRE BRICK CO. LTD.
GLADDING Mc BEAN & CO.
IRONTON FIRE BRICK CO.
DENVER SEWER PIPE & CLAY CO.
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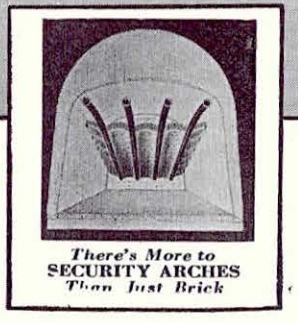
NORTH AMERICAN REFRACTORIES CO.
GLADDING McBEAN & CO.
DIAMOND FIRE BRICK CO.
HARBISON-WALKER REFRACTORIES CO.
ATHENS BRICK & TILE CO.



A product of proved merit is the first requisite for railroad service, but of equal importance is the certain source of prompt supply.

The Security Arch has both.

The American Arch Company, organized by men of extensive railroad experience, with a complete understanding of the importance of facilities to take care of railroad needs, early in their history provided sources of Arch Brick supply throughout the country.

These conveniently located points are indicated on the map above.

AMERICAN ARCH COMPANY

INCORPORATED

Locomotive Combustion Specialists

NEW YORK CHICAGO

horse. Mr. Sykes was born in Yorkshire, England, and was 48 years old at the time of his death.

TRADE PUBLICATIONS

INTERNAL BOILER FEEDWATER TREATMENT.—The Permutit Company, New York, has issued an eight-page illustrated folder in which it describes in some detail the equipment, chemicals, controls and laboratory service which it offers for the correct internal treatment of boiler waters to prevent scale formation, reduce foaming and priming, and to retard pitting and corrosion.

STEEL DATA BOOK.—A 192-page booklet known as General Data Book—Section 5, recently issued by Joseph T. Ryerson & Son, Inc., Chicago, provides an unusually readable and compact compilation of practical information on various special service steels and their heat-treatment. Especially noteworthy is an introductory chapter of 11 pages comprising a non-technical exposition of physical changes of steels with changes of temperature and the relation of these phenomena to the principles and practices of heat treatment. The remainder of the book consists largely of useful data in tabular and graphical form. Included among these are charts of the changes in physical properties of various steels with variations in heat treatment, tables of chemical and physical properties of steels, a statement of the influence of various elements in alloy steels, definitions used in the metal working industries, specifications, and other information of value to the users of steel products.

Construction

CHESAPEAKE & OHIO.—This road has awarded a contract to Fairbanks Morse & Company for the design and construction at Peru, Ind., of a 500-ton reinforced concrete locomotive coaling station, equipped with full automatic electric skip hoist type elevating equipment and crusher.

NEW YORK CENTRAL.—The New York Public Service Commission has approved plans, specifications and an estimate of cost of $169,700, exclusive of land and property damages, for elimination of the Carey road crossing of this road in Whitestown, N. Y.

SPRINGFIELD, ILL.—The Illinois Department of Public Works, division of highways, has asked for bids for the fabrication and delivery of structural steel for and the erection of a plate girder bridge under the tracks of the Chicago & Eastern Illinois on Route 121, in Douglas county; for the construction of a reinforced concrete substructure and steel I-beam superstructure under the tracks of the Elgin, Joliet & Eastern west of Lake Bluff, in Lake county; and for the fabrication and delivery of structural steel and the erection of the steel I-beam superstructure and reinforced concrete slab bridge under the tracks of the Chicago, North Shore & Milwaukee west of Lake Bluff in Lake county.

Financial

BOISE & WESTERN.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon its lines from Boise, Idaho, to Star, 16 miles, and from Boise to Onweiler, 9.2 miles.

BROWNSVILLE & MATAMOROS BRIDGE.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue $170,000 of first mortgage 5 per cent bonds to be delivered to the St. Louis, Brownsville & Mexico and the National of Mexico in repayment of advances. Commissioner Mahaffie dissented, claiming that it was not clear to him that the Interstate Commerce Commission had jurisdiction but suggested that the majority was perhaps right in taking jurisdiction since the applicant "apparently considers itself a carrier rather than merely the owner of a facility used by carriers." On the merits of the application, Commissioner Mahaffie found no justification for the issue of bonds in any amount. He pointed out that the two proprietary companies owned the stock of the bridge company and have advanced money to pay its bonds and interest until the bridge company is now clear of debt except for advances. Since the bonds are admittedly unsalable and will be retained by the proprietary roads, Mr. Mahaffie saw no justification for the issue "except that it may be considered somewhat unusual to have a rail facility that is not bonded in some form."

CHARLES CITY WESTERN.—*R.F.C. Loan.*—The Interstate Commerce Commission has authorized this company to borrow $140,000 from the Reconstruction Finance Corporation, part of which is to be repaid in annual installments of $12,000, the balance being due July 1, 1941.

CHESAPEAKE & OHIO.—*Notes.*—Morgan, Stanley & Co. and associates have offered at 100, subject to approval of the Interstate Commerce Commission, an issue of $15,300,000 of serial notes of this company bearing interest varying from 5/8 per cent to 2 7/8 per cent, and maturing in ten equal annual installments. The proceeds will be used to retire outstanding 4 per cent equipment trust certificates, effecting a saving in interest payments.

CHICAGO & NORTH WESTERN.—*Abandonment.*—The Interstate Commerce Commission has authorized the trustees of this company to abandon a part of a branch extending from a point near Caledonia, Ill., to a point near Harlem, 8.5 miles.

CHICAGO & NORTH WESTERN-WISCONSIN CENTRAL-MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—*Co-ordination Plan.*—These companies have applied to the Interstate Commerce Commission for authority to effect a co-ordination of facilities between Marshfield, Wis., and Wisconsin Rapids by construction of connecting tracks, operation under trackage rights, and abandonment of certain existing trackage.

CHICAGO GREAT WESTERN.—*Abandonment.*—The trustees of this road have been authorized by the Interstate Commerce Commission to abandon a branch line extending from Gilmore, Minn., to Rollingstone, 7.5 miles.

CHICAGO GREAT WESTERN.—*Equipment Trust.*—The Interstate Commerce Commission has authorized the trustees to assume obligation and liability in connection with an issue of $150,000 of equipment trust certificates, to be sold to the Reconstruction Finance Corporation in connection with the acquisition of 100 all-steel flat cars.

FORT WORTH & DENVER CITY.—*R.F.C. Loan.*—This company has applied to the Reconstruction Finance Corporation for a loan of $8,176,000 for ten years at 4 per cent, secured by an issue of first mortgage 4½ per cent bonds, as an amendment to a former application which contemplated sale of the bonds to the Chicago, Burlington & Quincy and by it to the R.F.C.

GRAND TRUNK WESTERN.—*Equipment Trust Certificates.*—This road has been authorized by the Interstate Commerce Commission to assume obligation and liability as assignee of $409,000 of Central Vermont equipment trust certificates, issue of 1929. The applicant proposes in connection with the transaction to sub-lease from the Central Vermont 375 automobile cars.

MINNEAPOLIS & ST. LOUIS.—*Dismemberment Hearing.*—Hearings on the proposed abandonment of portions of the Minneapolis & St. Louis as a part of the sale and dismemberment of the road, moved to southern Iowa from Ft. Dodge, on July 7. At Newton, testimony was taken on the proposed abandonment of the Newton-New Sharon branch. Protests of five small communities which would lose all railway service if the tracks of the M. & St. L. branch were torn up were heard. Fourteen industrial and business firms of Newton asked that spur connections be established with the Chicago, Rock Island & Pacific in the event of abandonment of the M. & St. L.

On July 10 the hearing was recessed to Albert Lea, Minn., where further testimony on the abandonment of 103 miles of line between Albert Lea and Ft. Dodge was taken. Here representatives of communities along this division protested against the proposed dismemberment, holding that the dismemberment would be discriminatory against their communities and would depreciate land and property values 25 per cent or more. Among those testifying were James Nelson, vice-president of the Freeborn National Bank at Albert Lea, who stated that 85 per cent of the 102 employees of the M. & St. L. living in Albert Lea had families and owned their own homes; Ore Ingbritsen, traffic manager of the American Gas Machine Company, who contended that loss of that part of the road would work to a disadvantage to his concern, Theodore Speltz of the Speltz Grain & Coal Company, who said he would be obliged to discontinue his places of business along the line, H. L. Peterson, a banker at Twin Lakes, James Sturtz of the Kansota farms, south of Albert Lea, and K. E. Doe, an operator of coal and lumber yards at Badger, Iowa and Leland.

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The Superheater

AS A FACTOR IN LOCOMOTIVE DESIGN

Each of the following features is being discussed in this series of advertisements.

Maximum Ton Miles per Hour

•

Boiler Capacity and Tractive Effort

•

Heating Surface and Boiler Capacity

•

Heating Surface and Boiler Efficiency

•

Minimum Draft Loss and Low Back Pressure

•

High Sustained Superheat

•

Higher Superheat and Minimum Steam Consumption

•

Greater Sustained Capacity

•

Reduced Fuel and Water Consumption per Unit of Work Done

•

Total Fuel Consumption of American Railroads

•

Reduced Cost of Locomotive Horsepower

For High Efficiencies Use Elesco Type "E" Superheaters

✓

✓

✓ **4**

✓

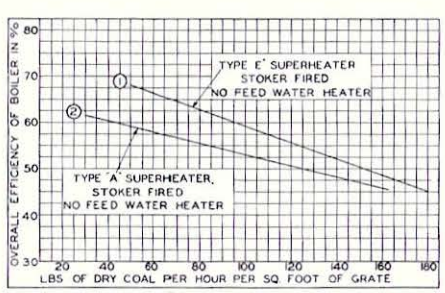
Heating Surface and Boiler Efficiency

Maximum boiler capacity requires a boiler with the largest heating surface within clearance limits, proportioned for highest efficiency of heat absorption.

At high rates of operation, the greatest part of the heat from the fuel is absorbed by the flues. The true heat absorbing efficiency of a smoke flue is increased by either decreasing the diameter or increasing the length of the flue. With the type "E" superheater design, the diameter of the superheater flue is decreased from the usual 5½ in. to 3¼ in., 3½ in. or 3¾ in., depending upon the length of the flue.

The combination of the correct diameter of flue and superheater pipe, and the length of the flue, is so chosen as to give the highest practical flue efficiency.

The curves show comparative boiler efficiencies obtained from actual tests. The boilers are identical in every respect with the exception of the superheater, one being equipped with a type "A" superheater and the other with a type "E" superheater. These curves are typical of the results being obtained on a great many tests.



THE SUPERHEATER COMPANY

Representative of American Throttle Company, Inc.

60 East 42nd Street
NEW YORK

ELESCO

Peoples Gas Building
CHICAGO

Canada: The Superheater Company, Limited, Montreal

Superheaters • Superheated Steam Pyrometers • Exhaust Steam Injectors • Feed Water Heaters • American Throttles

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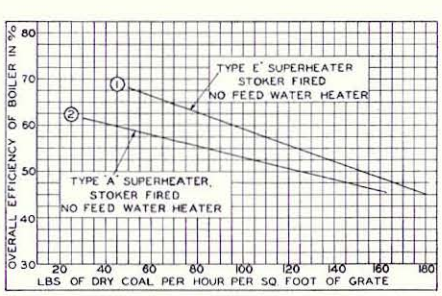

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Six days of hearings in South Dakota were begun at Aberdeen on July 16. Testimony was taken at Aberdeen, Shelby and Watertown.

MISSOURI PACIFIC.—*Equipment Trust.*—This company has applied to the Interstate Commerce Commission for authority for an issue of $3,490,000 of equipment trust certificates to be used in connection with the acquisition of equipment to the amount of $4,665,576.

MISSOURI PACIFIC.—*Purchase of Terminal Facilities.*—Trustees of the Missouri Pacific, in order to escape payment of $19,000,000, the balance due Terminal Shares, Inc., a Van Sweringen corporation, for the purchase of terminal facilities in Kansas City and St. Joseph, Mo., have filed suit on the allegation that the Missouri Pacific, then controlled by the Van Sweringen interests, was forced to buy terminal facilities for which it had no use. The suit also seeks a return of $3,200,000 already paid. Judge George H. Moore has ordered Terminal Shares, Inc., to show cause by July 22 why its claim should not be barred.

NEW YORK, CHICAGO & ST. LOUIS.—*R.F.C. Loan.*—The Reconstruction Finance Corporation on July 14 sold to the Guaranty Trust Company of New York at par and accrued interest the note of the New York, Chicago & St. Louis for $10,869,568.58, the balance due the corporation on its $18,200,000 of loans to the railroad company made in 1932.

NEW YORK, NEW HAVEN & HARTFORD.—*Old Colony Protective Committee.*—The Interstate Commerce Commission has authorized Francis R. Hart and four others to seek authorization to represent as a protective committee the shareholders of Old Colony R. R.

NEW YORK, NEW HAVEN & HARTFORD.—*Salary of General Counsel.*—The trustees have asked the Interstate Commerce Commission to give further consideration to its order of December 17, 1935, in which it prescribed the maximum compensation to be paid to William W. Meyer, counsel for the trustees, at $15,000 a year, expressing the opinion that he is entitled to not less than $20,000. The letter states that presumably the commisssion was not aware that in addition to the duties of general counsel of the company Mr. Meyer was also its officer in charge of finance; that the maximum compensation fixed was $500 less than he had received as general counsel, which was $2,000 less than had been paid to his predecessor, who was not in charge of finance; that $15,000 is less than the compensation paid to the head of the company's law department at any time since 1907; that from January 1, 1907, to April 1, 1935, the salary of the head of the law department had ranged from $17,500 to $40,000, and that during a large part of that time, in addition to a vice-president in charge of law and finance, there has been a general counsel at a salary ranging from $18,000 to $27,000. Mr. Meyer performs on behalf of the trustees the duties formerly performed by a vice-president in charge of law and finance. Comparisons are given of the salaries paid in similar positions by other roads.

PENNSYLVANIA.—*Abandonment of Operation.*—The Interstate Commerce Commission has authorized the Pennsylvania, Ohio & Detroit and the Pennsylvania, as lessee, to abandon operation of a portion of a branch line of the former extending from Trinway, Ohio, to a point near Tunnel Hill, 10.85 miles.

PENNSYLVANIA.—*Truck Line Acquisition.*—Division 5 of the Interstate Commerce Commission has issued an order staying the effect of the recommended order of an examiner dated June 25 recommending favorable action on the application of the Pennsylvania Truck Lines, Inc., for authority to acquire the property of the Barker Motor Freight, Incorporated. The recommended order was to have become effective in 20 days if no exceptions were filed, but the motor carrier act provides that the commission may, on its own motion, review any such matter and take action thereon as if exceptions had been filed.

PENNSYLVANIA.—*Acquisition.*—Examiner John S. Higgins, of the Interstate Commerce Commission, has recommended in a proposed report denial of the application of Scott Bros., Incorporated, for authority to acquire control of the W. G. Corporation through purchase of its entire stock from the U. S. Truck Lines, Inc., for $10,000. The report says that the purchase price for the stock was paid on January 1 and that control has already been exercised; that this is "deserving of censure, and such transactions should not be consummated prior to obtaining the approval of this commission." It is also stated that neither the net asset value of the corporation's stock, nor its past earnings as reflected on its books, appear to justify the price paid for the stock.

ST. LOUIS SOUTHWESTERN.—*Abandonment.*—The trustees have applied to the Interstate Commerce Commission for authority to abandon lines from Rice Junction, Ark., to Hazen, 17.24 miles, and from England, Ark., to Stuttgart, 26.04 miles.

SOUTHERN PACIFIC.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue $60,000,000 of ten-year 3¾ per cent secured bonds ($85,469,000 of S. P. and subsidiary bonds as collateral), the issue to be sold to Kuhn, Loeb & Co. at 97, making the interest cost approximately 4.125 per cent.

SOUTHERN PACIFIC.—*Government Loans Repaid.*—The Reconstruction Finance Corporation announced on July 13 that it had received $46,882,250 from the Southern Pacific in repayment of loans. Of this amount $17,000,000 represents the balance of the $22,000,000 loan made to the company in 1933, $17,882,250 represents the purchase from the corporation of the balance of $18,672,250 of loans to the St. Louis Southwestern made in 1932 and 1933 which were guaranteed as to collection by the Southern Pacific, and $12,000,000 represents the sale to the Southern Pacific of $12,000,000 of its collateral trust bonds purchased by the corporation from the Federal Emergency Administration of Public Works.

WESTERN PACIFIC.—*Budget for Improvements Recommended.*—The Reconstruction Finance Corporation has made public a report by Examiners T. A. Hamilton and F. E. Lyford, of its railroad division, of an inspection of the track, structures and equipment of the Western Pacific recommending adoption of a budget of expenditures for improvement amounting to $13,375,906. In an accompanying statement Jesse H. Jones, chairman of the R.F.C., said that some weeks ago, at a conference in his office of those interested in the property, the question was raised as to how much money would be required to place the property in proper physical condition to meet the reasonable requirements of traffic that it might hope to enjoy and the Interstate Commerce Commission was requested to postpone its hearings on the reorganization plan that had been filed in order to permit an examination to be made by the railroad division of the corporation. The report, which has not been passed upon by the R.F.C. directors, says the management had prepared a budget covering the three years 1936-38, proposing to obtain from the R.F.C. the major part of the necessary funds, to provide a portion by the sale of equipment trust obligations, and to draw the remainder from current income. This original budget has, after the study and resultant recommendations, been expanded as to some items, and as now recommended includes $6,969,580 for track and structures and $2,666,326 for equipment, making a total of $9,635,906 to be obtained from the R.F.C., $3,415,000 for equipment to be financed by equipment trust obligations, and $325,000 for equipment to be financed from 1936 income.

Chairman Jones said at a press conference that the idea of a consolidation of the Western Pacific and the Denver & Rio Grande Western under joint control of the Chicago, Burlington & Quincy and the Missouri Pacific had been suggested during discussion of the reorganization plans and that the R.F.C. "would go a lot farther" in helping such a merger than it would go in helping individual plans for the roads affected.

Average Prices of Stocks and of Bonds

	July 14	Last week	Last year
Average price of 20 representative railway stocks..	53.74	48.81	34.78
Average price of 20 representative railway bonds..	80.51	79.29	74.71

Dividends Declared

Kansas City, St. Louis & Chicago.—$6 Preferred, $1.50, payable August 1 to holders of record July 20.

Michigan Central.—$25.00, semi-annually, payable July 31 to holders of record July 21.

Northern R. R. of New Hampshire.—$1.50, quarterly, payable July 31 to holders of record July 13.

THE RAILWAY BUSINESS WOMEN'S ASSOCIATION of Cleveland has set August 16 as R. W. B. A. Day at the Great Lakes Exposition, in that city, at which time members of the associations at Chicago, the Twin Cities, Cincinnati and Buffalo will be received as visitors.

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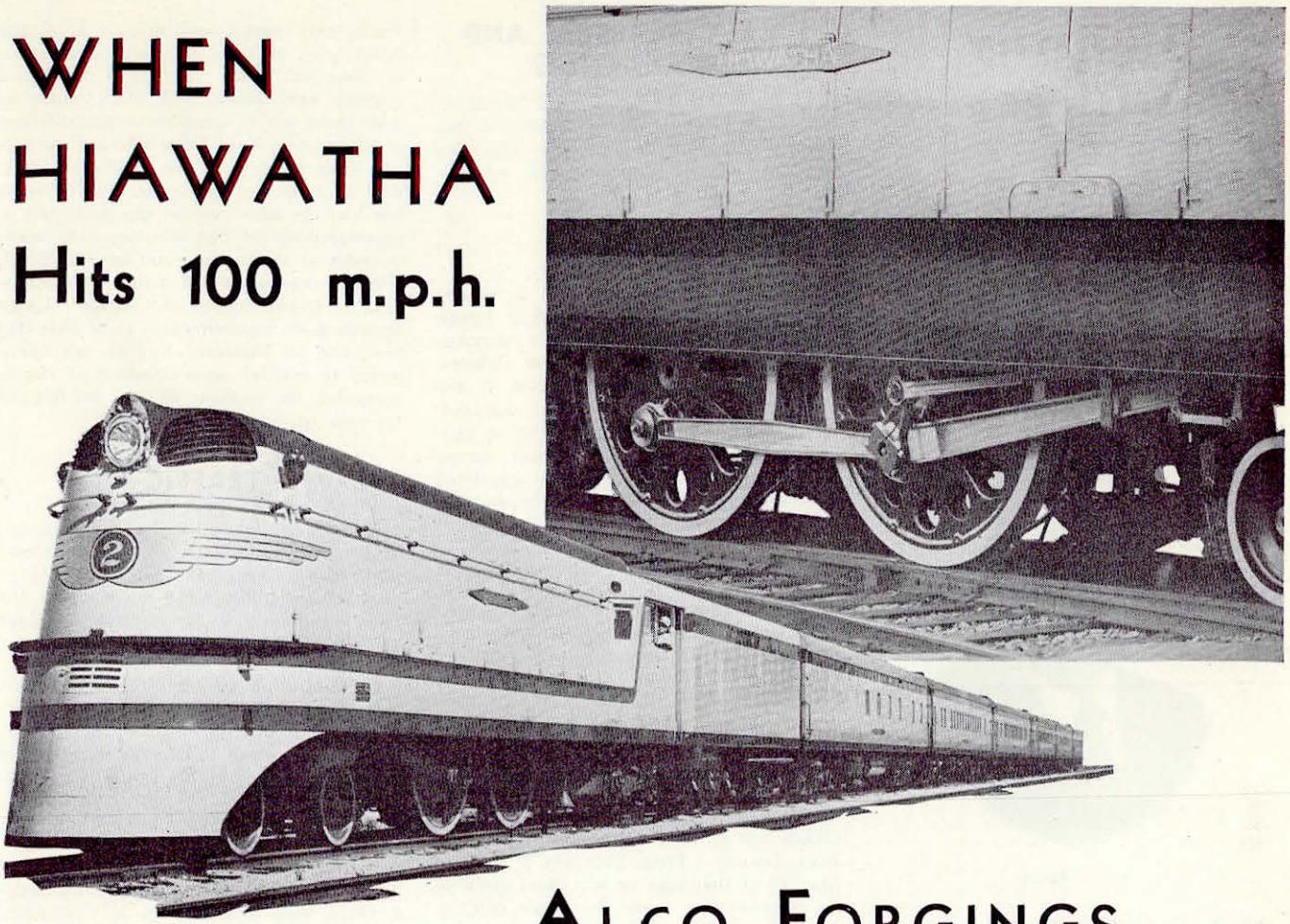
WHEN HIAWATHA Hits 100 m.p.h.



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Railway Officers

EXECUTIVE

R. L. Burnap, executive assistant of the Grand Trunk-Canadian National, with headquarters at Chicago, retired on July 15 and the position of executive assistant has been abolished. He was born at Burlington, Vt., on September 20, 1872, and graduated from Dartmouth college in 1894. In the fall of that year he entered railway

R. L. Burnap

service as a clerk in the office of the station agent of the Central Vermont at Ogdensburg, N. Y. From April 15 to Dec. 5, 1895, he was timekeeper on the same road at Ogdensburg and on the latter date became associated with the freight traffic department as clerk to the division freight agent at that point. In April, 1896, he went to New York to join the freight traffic department of the Central Vermont as a commercial agent. On September 1 of the same year he was appointed traveling freight agent at New London, Conn., and in February, 1900, became commercial agent at New York, a position which he held until August 14, 1905, when he was transferred to St. Albans, Vt., to assume the duties of general freight agent of the road. Three years later, he entered the service of the Grand Trunk as assistant general freight agent, with headquarters at Chicago. From that position he was appointed assistant freight traffic manager on November 1, 1911, traffic manager on May 1, 1919, and freight traffic manager for the Grand Trunk lines west of the St. Clair river on March 1, 1920. In November, 1927, he became assistant general freight traffic manager of the Canadian National and freight traffic manager of the Central Vermont, with headquarters at Montreal, and with jurisdiction in respect to the freight traffic of these two companies in the United States. In 1930 he was promoted to vice-president in charge of traffic for the entire Canadian National System, with headquarters at Montreal, and in 1933 became executive assistant with headquarters at Chicago, where he represented the system in the United States.

FINANCIAL, LEGAL AND ACCOUNTING

Clifford Robert Lunt, clerk in the office of the local treasurer of the Toronto, Hamilton & Buffalo, has been appointed local treasurer at Hamilton, Ont., succeeding the late **John H. Betz.**

OPERATING

C. E. Weaver, who served as Southern regional director on the staff of Joseph B. Eastman, federal co-ordinator of transportation, with headquarters at Atlanta, Ga., has returned to the service of the Central of Georgia as general manager. **R. R. Cummins,** who had served as general manager and chief engineer during Mr. Weaver's absence, has been appointed assistant general manager, a newly created position.

H. R. Lake, superintendent of transportation for the Atchison, Topeka & Santa Fe, with headquarters at Chicago, has been appointed general manager of that road's newly-established department of highway motor transportation. **H. G. Brandt,** trainmaster at Wellington, Kan., has been appointed assistant to general manager of the new department. Mr. Lake was born in Eagle Lake, Tex., on October 26, 1882, and entered railway service on August 15, 1898, as a bill clerk with the Choctaw, Oklahoma & Gulf (now a part of the Rock Island). From February 2, 1901, to May 11 of that year he was chief clerk to the timekeeper; from the latter date to June 30, 1902, timekeeper; from the latter date to September 23, 1902, chief clerk to the superintendent; from that date to January 1, 1903, transportation clerk in the general superintendent's office; then to

H. R. Lake

March 1, 1903, general timekeeper; from the latter date to June 30, 1904, a clerk in the general superintendent's office; and then to September 30, 1905, chief clerk to the general superintendent of the Midland Valley. On October 1, 1905, Mr. Lake entered the employ of the Atchison, Topeka & Santa Fe as transportation clerk in the general superintendent's office at La Junta, Colo., and on August 1, 1907, he was transferred to Newton, Kan. From 1909 to 1915, he served as clerk and chief clerk in the general superintendent's office at La Junta and Topeka, and on July 1, of the latter year, he was appointed trainmaster at Emporia, Kan. He held the latter position until January 18, 1919, when he was promoted to assistant superintendent at Wellington, Kan., being adavnced to acting superintendent of the Panhandle division on June 1 of that year. On November 1 of the same year he was promoted to superintendent of that division, with headquarters at Wellington, and on March 15, 1926, he was appointed acting superintendent of transportation at Chicago. Later he was made superintendent of transportation, and on February 1, 1931, was promoted to general superintendent of transportation, the position he was holding at the time of his recent promotion.

TRAFFIC

E. L. Thrall, chief of the tariff bureau of the Pere Marquette, with headquarters at Detroit, Mich., has been promoted to assistant general freight agent, with the same headquarters, the position of chief of the tariff bureau being discontinued.

C. R. Lanphear, city freight agent of the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Seattle, Wash., has been promoted to division freight and passenger agent, with headquarters at Bellingham, Wash., to succeed **George W. Blair,** deceased.

F. A. Powelson has been appointed division passenger agent of the Chesapeake & Ohio, with headquarters at Columbus, Ohio. **Oscar A. Anthony** has been appointed district passenger agent at Houston, Tex., to succeed **Paul H. Swinney,** who has resigned to enter the service of another company.

C. W. Adams has been appointed general agent, freight department of the Missouri Pacific lines, with headquarters at Houston, Tex., succeeding **E. M. Weinberger,** who has been appointed general agent, freight and passenger departments, with headquarters at Atlanta, Ga. Mr. Weinberger succeeds **R. W. Moss,** who has been appointed general agent, freight and passenger departments, with headquarters at Beaumont, Tex. Mr. Moss succeeds **F. W. Nason,** who has been appointed division freight and passenger agent.

ENGINEERING AND SIGNALING

H. F. Sharpley, assistant chief engineer of the Central of Georgia, with headquarters at Saavnnah, Ga., has been appointed chief engineer.

F. T. Beckett, engineer maintenance of way of the Chicago, Rock Island & Pacific, with headquarters at Kansas City, Mo., has been promoted to assistant chief engineer with the same headquarters.

B. W. Wheelwright, office engineer of the Central region of the Canadian National at Toronto, Ont., has been promoted to engineer maintenance of way of

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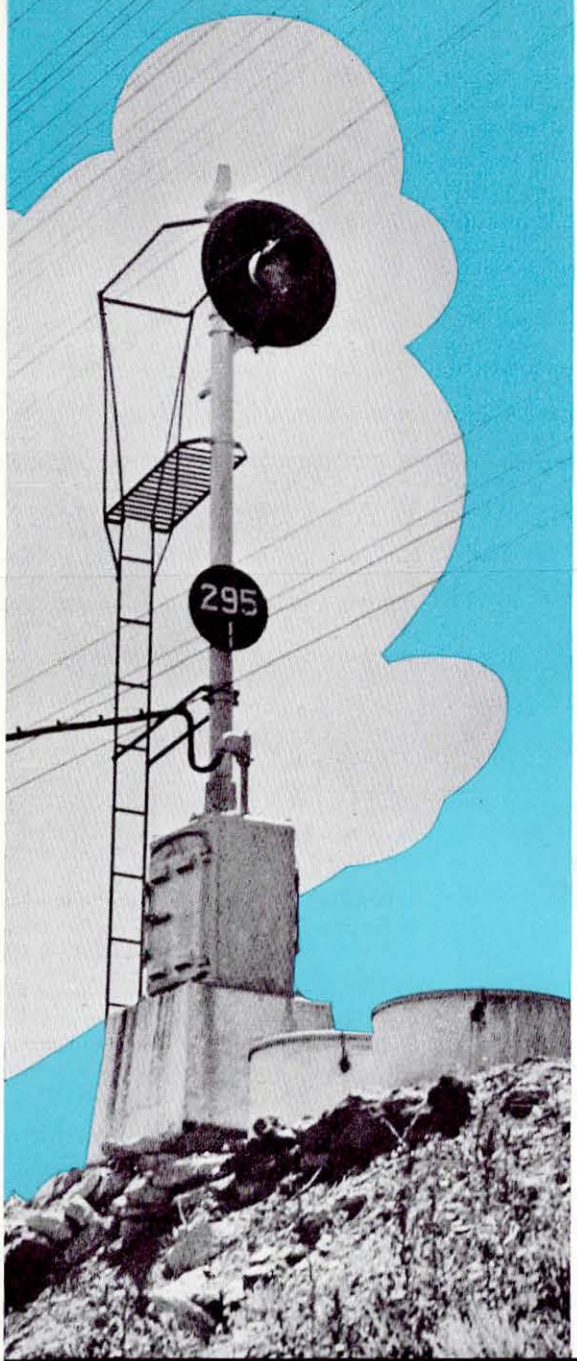
LET'S KEEP GOING!



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the Central region, with the same headquarters, to succeed **E. G. Hewson,** who has been appointed office engineer.

Asa H. Morrill, acting chief engineer of the Boston & Maine and the Maine Central, has been appointed chief engineer

Asa H. Morrill

of these roads, with headquarters at Portland, Me., and Boston, Mass. Mr. Morrill was born at Concord, N. H., on October 7, 1870, and was graduated from the Massachusetts Institute of Technology in 1892. He entered the service of the New York, New Haven & Hartford in June of the latter year, serving consecutively to January 19, 1906, in various positions from clerk to roadmaster in the maintenance of way department. From June 16, 1906, to January 19, 1907, he served as draftsman on the same road, being appointed assistant engineer of construction on the latter date. On February 1, 1913, Mr. Morrill was appointed engineer of construction and valuation engineer of the Maine Central and Portland Terminal Company, serving in this capacity until his appointment as chief engineer of the Maine Central in March, 1928. In 1933 Mr. Morrill was appointed assistant chief engineer of the Maine Central and the Boston & Maine and he has been acting chief engineer of these roads since April of this year.

MECHANICAL

C. F. McKinney, office engineer of the Erie, with headquarters at Cleveland, Ohio, has been promoted to supervisor of tools and machinery, with the same headquarters, to succeed **N. B. Emley,** deceased.

Thomas J. McDermott, chief draftsman of the motive power department of the Delaware, Lackawanna & Western, has been appointed mechanical engineer, with headquarters at Scranton, Pa., to succeed the late **Samuel S. Riegel.**

Philip J. Norton, district superintendent of motive power and machinery of the Union Pacific, with headquarters at Pocatello, Idaho, has been promoted to assistant general superintendent of motive power and machinery, with jurisdiction over the locomotive and car departments of the Central, Northwestern and Southwestern districts, with the same headquarters. The promotion is coincident with the assignment of **Otto Jabelmann** to head the Union Pacific's new research bureau. **A. L. Looney,** superintendent, car department, with headquarters at Omaha, Neb., has been appointed general car inspector, with the same headquarters.

E. G. Bowie, master mechanic of the British Columbia district of the Canadian Pacific, with headquarters at Vancouver, B. C., has been promoted to works manager of the Ogden shops and has been succeeded by **Joseph P. Kelly,** master mechanic of the Saskatchewan district, with headquarters at Moose Jaw, Saskatchewan, who in turn has been succeeded by **G. H. Nowell,** division master mechanic, with headquarters at Moose Jaw.

Otto Jabelmann, assistant general superintendent of motive power and machinery of the Union Pacific, with headquarters at Omaha, Neb., who heads the newly-established research bureau of this company, was born in Cheyenne, Wyo., and started service with the Union Pacific in 1906 at the age of 16 as a caller in the roundhouse at that point. He has been continuously in the service of the Union Pacific since that time, with the exception of three years during which he attended the University of Michigan. He is the de-

Otto Jabelmann

signer of the Union Pacific's two latest streamliners, the "City of Denver," and is also one of the designers of the new trucks and a number of other mechanical innovations adopted on all Union Pacific streamliners.

J. M. Kerwin, master mechanic of the Illinois division of the Chicago, Rock Island & Pacific, with headquarters at Silvis, Ill., and **L. D. Richards,** superintendent of motive power, with headquarters at Kansas City, Mo., have been appointed district superintendents of motive power, with headquarters at Silvis, Ill., and El Reno, Okla., respectively, coincident with the division of the system into three operating districts. Messrs. Kerwin and Richards will have jurisdiction in mechanical matters in the territories assigned to them. Mr. Kerwin was born on January 5, 1884, at Chicago, Ill., and was educated at Armour Institute of that city. He entered railway service on October 27, 1899, as a machinist apprentice on the Chicago, Rock Island & Pacific, and after serving as a machinist from October 28, 1903, to January 16, 1908, was promoted to assistant roundhouse foreman at Chicago. On May 1, 1911, he was promoted to roundhouse foreman at Silvis, Ill., which position he held until April 1, 1915, when

J. M. Kerwin

he was promoted to general foreman at Cedar Rapids, Iowa. Since April 10, 1916, he has been a master mechanic, being located at Estherville, Iowa, until January 31, 1918, at Silvis, Ill., from that date to April 15, 1919, at Goodland, Kan., from the latter date to May 16, 1923, at Trenton, Mo., from the latter date to October 15, 1926, and at Silivs, Ill., from the latter date to July 1, 1936, when he was promoted to superintendent of motive power of the First district.

OBITUARY

P. W. Conley, who retired as superintendent of the St. Louis terminals of the St. Louis-San Francisco in 1932, died in Chicago on June 26.

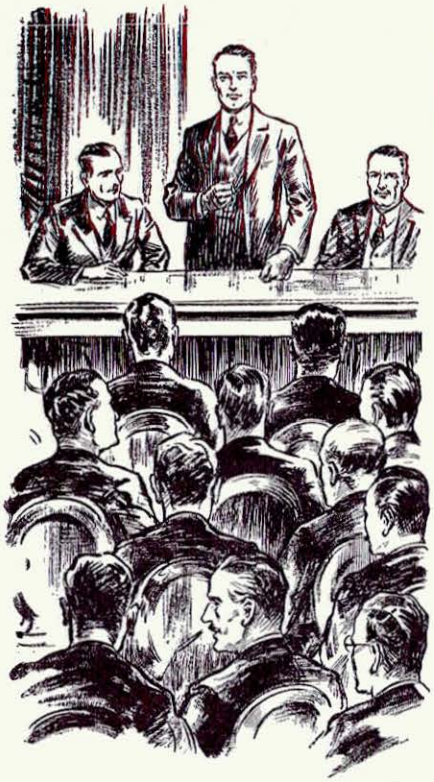
William D. Skinner, who retired as traffic manager of the Spokane, Portland & Seattle in 1924, died in Spokane, Wash., on July 12.

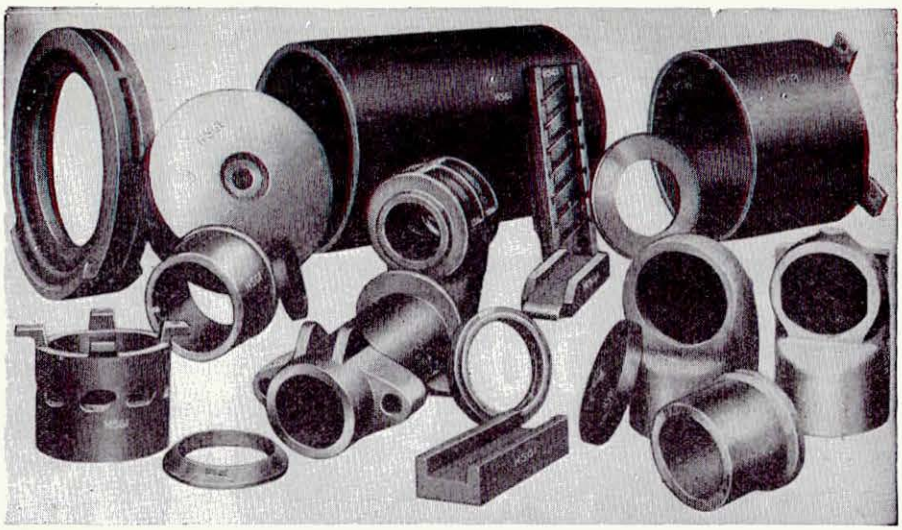
J. H. Johnson, division superintendent of the Northern Pacific, with headquarters at Spokane, Wash., died in that city on July 12 following a two weeks' illness.

John H. Betz, local treasurer of the Toronto, Hamilton & Buffalo, with headquarters at Hamilton, Ont., died suddenly on July 5 at his home in that city.

Alan McMichael, coal freight agent of the New York Central, with headquarters at New York, died on July 9, at his home at New Rochelle, N. Y., of a heart ailment. Mr. McMichael began his railroad career with the New York Central at Buffalo in 1896.

Edward J. Thill, engineering assistant to the assistant to the president of the New York Central, died on July 11 at his home in New York at the age of 54 years. Mr. Thill had been in the service of the New York Central for 37 years and at the time of his death was connected with the rolling stock division.





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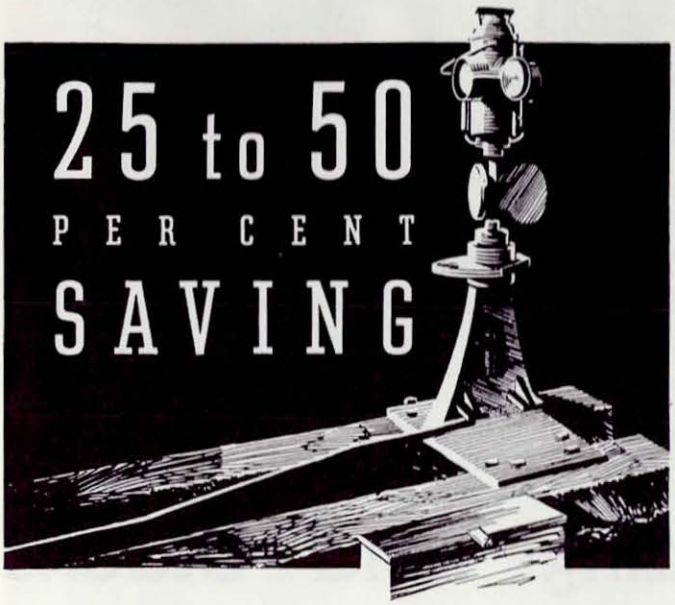

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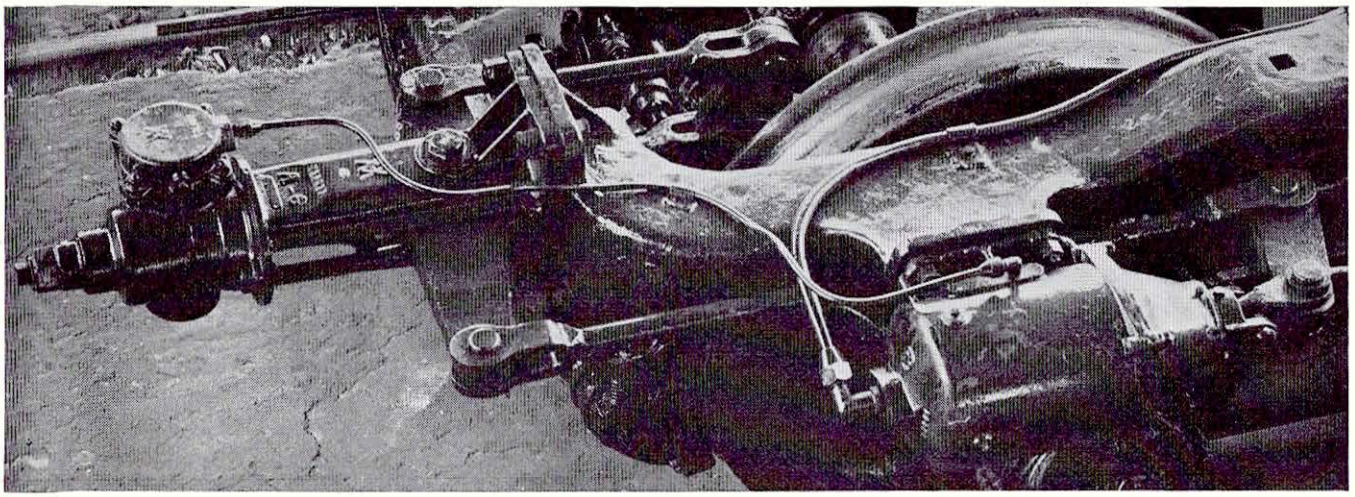

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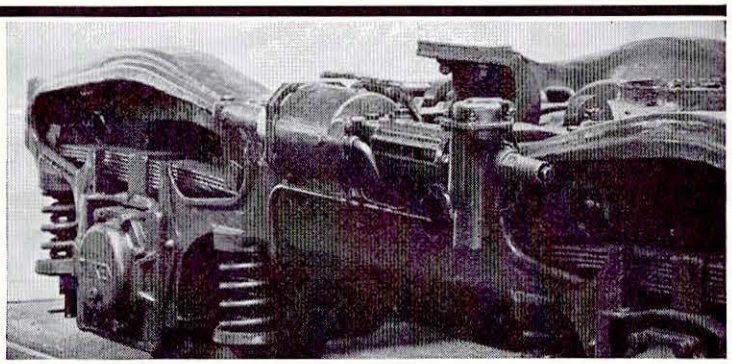

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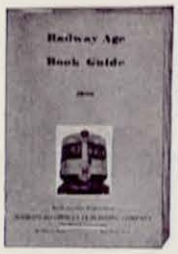
Railway Age Book Guide



Here is a handy reference booklet on railroad books that are of interest to readers of "Railway Age." In it are described practically all of the books published during the past decade that are in print. They are classified under subject headings and arranged in chronological order. A title index in the back facilitates quick reference.

SUBJECT INDEX

Accounting — Administration — Consolidation — Co-ordination — Economics — Finance — General — History — Law — Officers — Personnel — Rates — Regulation — Statistics — Traffic Management — Valuation.

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These side frames are in unusually good condition, and can be purchased at a very attractive price. All kinds of reclaimed, reconditioned Freight Car Parts—Storage Tanks—Send Us Your Inquiries—
ERMAN-HOWELL & CO., INC.,
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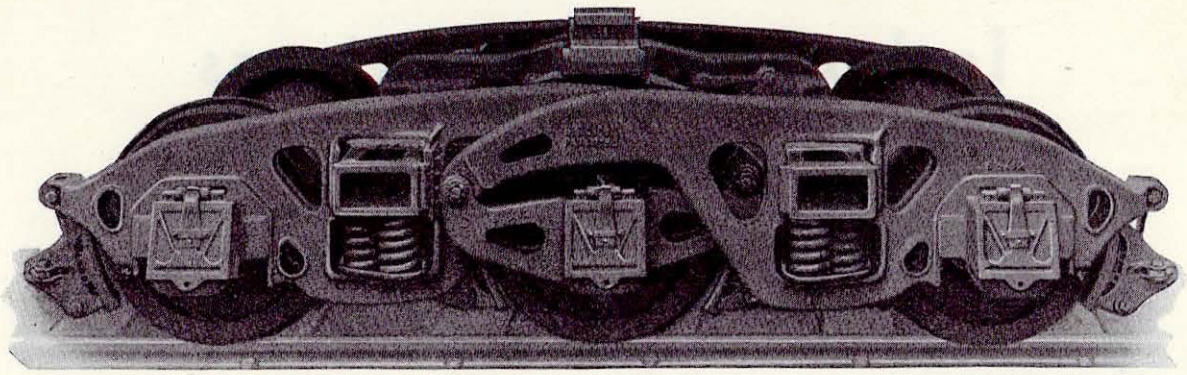
THE BUCKEYE STEEL CASTINGS COMPANY



The efficiency of a locomotive tender is judged by its maximum fuel and water capacity with a minimum wheel load, and by its cost of maintenance.

Buckeye Six-Wheel Tender Trucks being made from A. A. R. "Grade B" cast steel, compared with other tender trucks of equal axle capacity show an average weight saving of 20%—a desirable reduction of wheel load.

This type of truck, due to positive and simplified equalization effecting quick wheel changes, and because all wearing surfaces are protected by manganese steel plates, also shows a great saving in operating costs.

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"Arctic" BRONZE CROWN BEARINGS

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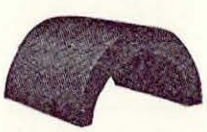

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STURDILY constructed of Rust Proof Steel, Sunbeam Headlights are built for permanent dependability. They will resist wear and tear longer than the locomotive to which they are applied. Available in 12 inch and 14-inch sizes, with glass reflectors, Sunbeam Headlights afford low-cost lighting service, because they need never be replaced

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THE P. & M. CO.

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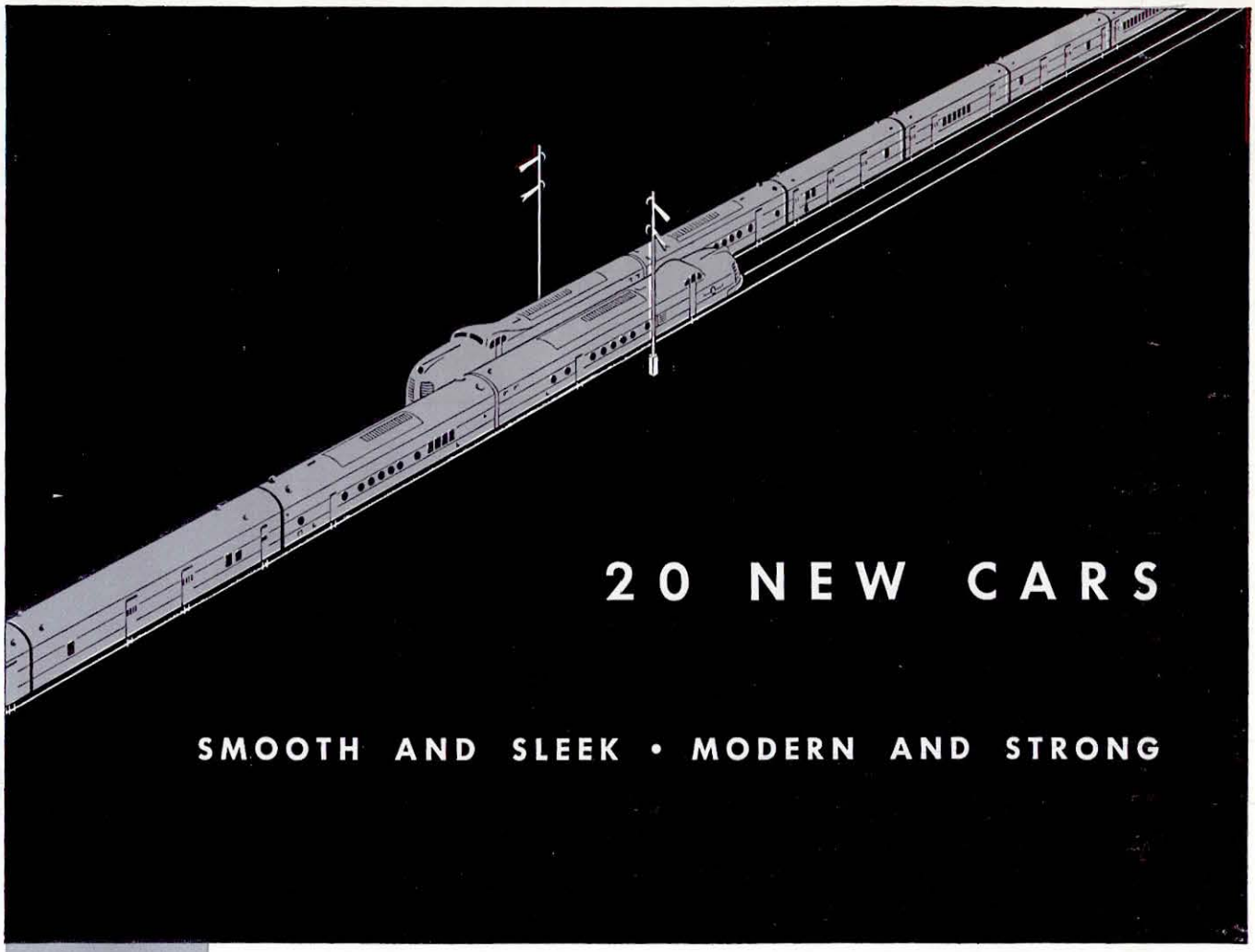

ALCOA

● Look well at the twenty new all-Aluminum cars making up the new Union Pacific Streamliners, City of Denver. These trains give visible evidence of a practical railroading advantage derived from Aluminum design.

On the Aluminum cars you will see side and roof sheets smooth and without buckles. The engineering reason is the basic reason for using Aluminum: Nature made Aluminum light. Inherent lightness allows the use of sheets that are thick; thickness insures the stiffness that prevents buckling.

The same principle applies to structural members — lightness permits thickness required for rigidity.

This is another demonstration of sound construction wedded to desired lightness. M-10005 and M-10006 weigh approximately half as much as comparable trains of conventional materials.

We point out these facts, to add to the general understanding of the inherent capabilities of Alcoa Aluminum. We do not construct, or sell rolling stock. The counsel of our engineers looks solely to economical use of the various forms of Alcoa Aluminum where it can serve better than any other metal. ALUMINUM COMPANY OF AMERICA, 2178 Gulf Building, Pittsburgh, Pennsylvania.

ALCOA ALUMINUM

Burroughs

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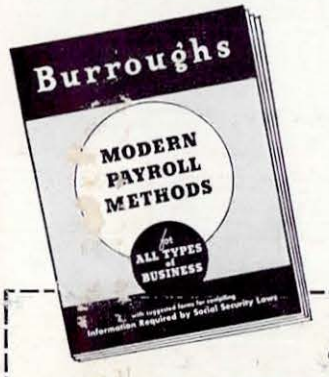
and at the same time obtain the information required by the

SOCIAL SECURITY ACT

Many employers are finding in recent Burroughs developments a simple solution of the accounting problems set up by the Federal Social Security Act. Often the exceptional speed, ease and economy of new Burroughs machines make it possible for employers actually to lower accounting costs and still have the additional information required.

In fact, many say: "We are glad the Social Security Act prompted us to investigate, because we now have the complete payroll accounting system we have needed for a long time."

We suggest that you call the local Burroughs office. A Burroughs representative will be glad to show you how we can assist you to meet your problem with the minimum change in equipment, and at the lowest possible accounting cost.



THIS NEW FOLDER MAY HELP YOU

Burroughs has just prepared an interesting descriptive folder illustrating complete payroll accounting methods, with typical forms for maintaining the information required by the Social Security Act. The forms show representative entries and suitable column headings. You may have this folder without charge simply by filling in and mailing the coupon.

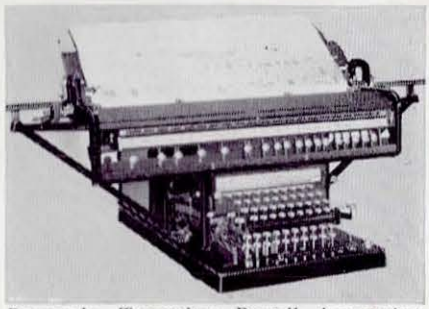
Burroughs Adding Machine Company
6535 Second Boulevard, Detroit, Michigan

Send me the new folder, "Modern Payroll Methods"—which includes illustrations of forms for compiling figures required by the Federal Social Security Act.

Name_____

Address_____

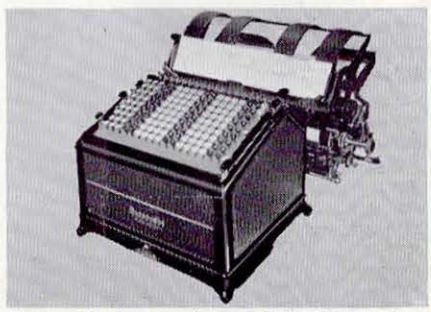
NEW MACHINES FOR PAYROLL ACCOUNTING



Burroughs Typewriter Payroll Accounting Machine writes check, earnings record, employee's statement and payroll summary in one operation. Column selection automatically controlled. All totals accumulated.

Burroughs Desk Bookkeeping Machine posts earnings records, automatically prints dates in proper columns, automatically subtracts deductions—calculates net pay.

Burroughs Electric Carriage Check-Writing Typewriter writes payroll checks either in units or in strips. Payroll summary completed at same operation. Fast and easy insertion and removal of checks.



Burroughs Automatic Payroll Machine writes check, employee's earnings statement, earnings record and payroll summary in one operation. Accumulates all necessary totals, automatically ejects and stacks checks in order.